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B.K. PASSI

Innovative Teacher Education
— A Pipe Dream

D.C. SURANA

Innovation, Creativity and Entrepreneurship

BIDYUT LATA RAY

Krsna Worship in Orissa

A.L. CHAUDHRY

Our Livestock Wealth
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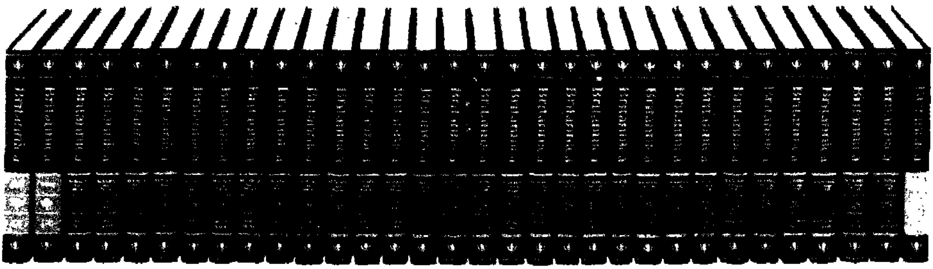

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Editor :
SUTINDER SINGH

Innovative Teacher Education
A Pipe Dream

B.K. Passi

NCTE Act and Teacher Education

Teacher Education attained a new entity in 1993 when the Parliament passed National Council for Teacher Education (NCTE) Act. Now the new boundaries are earmarked. New roles are specified through the enacted functions. The popular and professional definition of the entity was existing. Apart from other definitions of teacher education, I am confining myself to the definition and meaning as given in the ACT — "Teacher Education" means programs of education, research or training of persons for equipping them to teach at pre-primary, primary, secondary and senior secondary stages in schools, and includes non-formal education, part-time education, adult education and correspondence education". This definition covers as many as seven inter-related areas of education and teacher education. It also refers to three approaches of teacher preparation, such as, professional programs of *education, training*, and *research* leading to the preparation of teachers of pre-school, formal schooling, nonformal schooling, open education, adult education, and so on. Figure 1 is useful for understanding the meaning of teacher education.

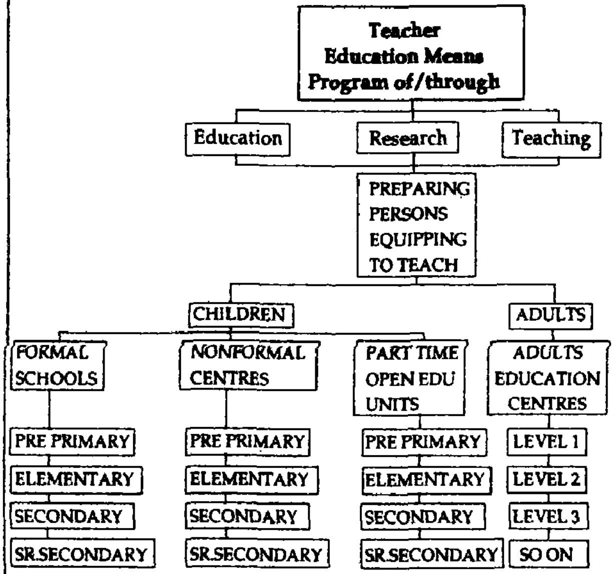

Figure 1 : Definition of Teacher Education

Scope of Teacher Education System

All the modes of teacher education programs like, face-to-face, distance education, correspondence teacher education, open education teacher education, vocational education teacher education fall within the framework of the enacted scope. All the systems, levels, and stages of teacher education operating around formal, nonformal, informal approaches are within the periphery of teacher education. The pre-service, in-service induction, and developmental programs are part and parcel of teacher education. One can carve out a scenario on the basis of following information.

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* *Vice Chairman, National Council of Teacher Education, New Delhi-110 002.*

System is Large and Diverse

The existing system of teacher education is large, less coordinated, diverse in nature, and is expanding in scope. Figure 2 below describes its nature.

It covers a variety institutions, personnel, and programs:

- All teacher education programs leading to the preparation and development of teachers for pre-primary, primary, elementary, secondary, senior secondary stages, and NFE, adult education, and open education sectors.
- About 2000 teacher education institutions located all over the country.
- About 25000 teacher educators belonging to teacher education of all academic, vocational, and co-curricular areas.
- About 50 lakhs teachers working in 8 lakh schools, and lakhs of NFE, ECCE, AE, learning centres.
- All educational administrators working in areas related to teacher education in NCERT, SCERTs, SBTEs, SIETs, Secondary Boards, DEOs, BEOs, Inspectors, etc.
- About 200 universities having faculties of Education, examining bodies, and other allied organizations.

Demanding Diverse Functions

The NCTE performs diverse functions covering both regulatory, and developmental aspects of teacher education. The functions include areas of planning, programming, advising, various types of teacher education programs. It visualizes NCTE to organize surveys, research, educational studies, promotion of innovations, institutional develop-

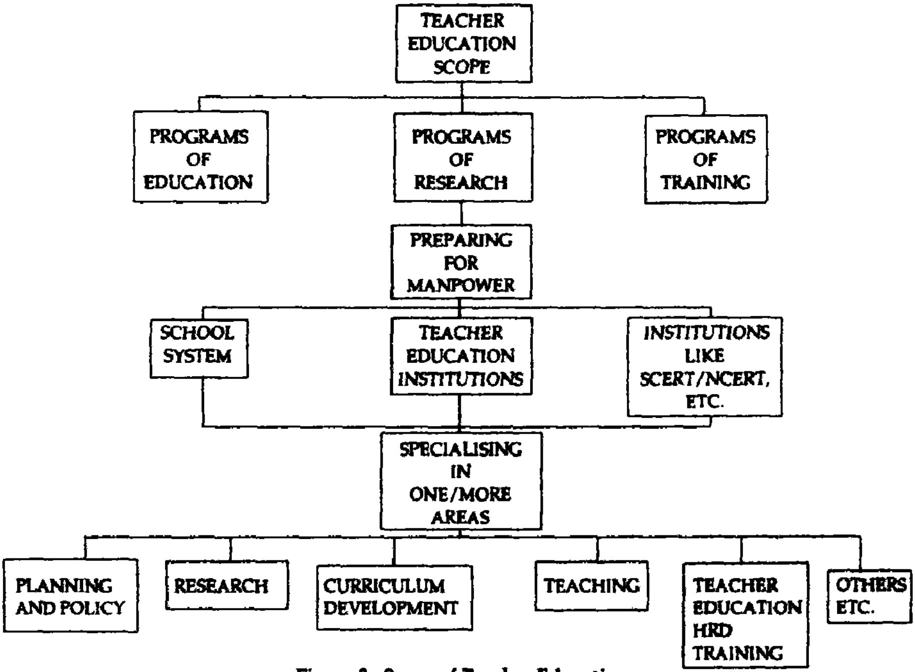

Figure 2 : Scope of Teacher Education

ment, manpower planning, preventing commercialization, and so on. The spectrum of functions is very wide, varied, and complex. These would demand serious attention of professionals. Where is the expertise to perform these demanding functions enacted in the ACT —

a. undertake surveys and studies relating to various aspects of teacher education and publish the results thereof;
b. make recommendations to the Central and State Governments, Universities, University Grants Commission and recognised institutions in the matter of preparation of suitable plans and programs in the field of teacher education;
c. coordinate and monitor teacher education and its development in the country;
d. lay down guidelines in respect of minimum qualifications for a person to be employed as a teacher in schools or in recognised institutions;
e. lay down norms for any specified category of courses of training in teacher education, including the minimum eligibility criteria for admission thereof, and the method of selection of candidates, duration of the course, course contents and mode of curriculum;
f. lay down guidelines for compliance by recognised institutions, for starting new courses or training, and for providing physical and instructional facilities, staffing pattern and staff qualifications;
g. lay down standards in respect of examinations leading to teacher education qualifications, criteria for admission to such examinations and schemes of courses or training;
h. lay down guidelines regarding tuition fees and other fees chargeable by recognised institutions;
i. promote and conduct innovation and research in various areas of teacher education and disseminate the results thereof;
j. examine and review periodically the implementation of the norms, guidelines and standards laid down by the Council, and to suitably advise the recognised institutions;
k. evolve suitable performance appraisal systems, norms and mechanisms for enforcing accountability on recognised institutions;
l. formulate schemes for various levels of teacher education and identify recognised institutions and set up new institutions for teacher development programs; and
m. take all necessary steps to prevent commercialization of teacher education; and perform such other functions as may be entrusted to it by the Central Government.

Preferred Personnel Preparation

The expanded definition and enhanced scope of teacher education, and demanding diverse functions of teacher education, the largeness of the system, the escalating desire of quality improvement in education, and complexity of field trends necessitates the induction of new manpower. The issues of manpower requirements, preparation, development, recruitment, and retention are crucial and cannot be left to chance. The country launched a much awaited program of DIETs without instituting any mechanism for formal training of elementary teacher educators. Formal preparation of stage-specific teacher educators is urgent and important.

Preparing Teacher Educators

Divergent perspectives like viewpoint of natural development, ad-hoc preparation viewpoint, and deliberate efforts viewpoint and many more could be listed here. Somewhere else I have pursued this unattended, rather unrecognised problems of preparing interdisciplinary manpower of teacher educators. Four institutional arrangements regarding the deliberate preparation and development of teacher education and teacher educators could be listed. These are : (a) Centralized Single Site Model — Formal Model, (b) Coordinated Centralization Multi Site Model — Embassy Model, (c) Parking Model — Nonformal Model, and (d) Learning Waves Model — Informal Model (Table 1). We must allocate adequate resources for the planned and deliberate preparations of teacher educators. We must distinguish between the manpower prepared for teaching in schools and that of training of trainers.

Personnel for New System

It is not true that education can be improved by classroom teacher alone. There are many other persons and forces which are operating upon education. We have to seriously improve every function, every aspect, and every person working at every stage. Continued professional development of all the persons working in the system, ranging from that of a gate keeping man to board-room managers, from that of peons to principals have to be transformed. Total quality functions ranging from popular function of simple teaching to that of system designing have to be reviewed. We need to have efficient teachers, principals, persons working inside and outside the system, specialized teacher educators, other functionaries of specialized areas like physical education, computer education, yoga education, and special needs education. There will be teachers of various shades working in our system. Accordingly, teacher education has to expand its training kit and broaden its vision.

Like personnel and professionals working in medical hospitals, some imaginative practitioners of teacher education are advocating a new diversity and hierarchy of preparing personnel for our school systems. A new vision is being talked of. These imaginative practitioners claim that the preferred needs of the futuristic education profession would follow the lines of that of a good teaching hospital. A hospital needs administrators, supervisors, consultants, senior experts in medicine, general practitioner doctors, specialized support technicians, caring nurses, smart ward boys, etc. These educational dreamers assert that likwise our schools would need to recruit or prepare a multiple cadre of assorted professionals. Narrow range of existing personnel would have to be transformed with the help of role specific in service teacher education programs.

These educational dreamers suggest that apart from the general cadre of teachers, we have to prepare futuristic school principals, visionary financial advisors, proactive public relations personnel, human comfort giving school plant managers, specialized transport managers, library, media, and resource-centre managers, residential health and food caretakers, play-cum-recreation and physical education experts, managers of personnel and human development, curriculum development specialists, educational guidance counsellors, holistic whole brain evaluators, and grade management personnel.

Three Dimensions of Manpower : Area, Level, Role

The system of teacher education is complex. Future vision should be three dimensional i.e. areas, levels, and roles. It requires different levels of expertise even in one given area of work, say, curriculum development of teaching. We need teachers, para-teachers, helper teachers, senior masters, teaching consultants, system designers, and viewfinders. The preparation of these persons cannot be left to chance. Deliberately professional initiatives have to be taken up by the proactive nations. Programs ranging from simple certificate, diploma, graduate degree, postgraduate degree, master of philosophy, doctoral-consultant degree, and others have to be instituted on a priority basis. Maybe existing universities and their Education Faculties have to enter with a new duty and commitment. European universities are entering in the teacher education of preschool education, elementary education. Universities should enter in all the areas of teacher education, but more so in the emerging areas of teacher education of ECCE, adult education, teacher education, nonformal teacher education, senior secondary teacher education, open learning system teacher education. We have to cover all the seven areas and six levels of teacher training. One can see a cumulative hierarchy across the levels. A pool of assorted manpower has to be created.

Model	*Focus/Aspect*	*Site/Campus*	*Faculty/Researchers*
1. Centralized Single Campus (Formal Model)	Holistic teacher education	One large campus like IITs, IIMs	Faculty will be multiple disciplinary flexible departmental organisation, full time
2. Coordinated Decentralized Multi-Campus (Embassy Model)	Coordinated role, facet/areas specific study of chosen aspect	Multiple sites located in different institutions regions/cities	Faculty will be full time organized department/project wise through collaboration
3. Parking campuses (Non-Formal Model)	Relevant parking campus having area specific strength will be studied	Multiple request campuses coordinated through chosen functional focus	Mostly part time faculty willing to pursue chosen area of study as per focus
4. Learning Waves (Informal Model)	Emerging focus emanate from the available strength of willing partners	Multiple camp-locations for organizing multi-media conferencing, Sequential conferencing and seminars	Faculty unpaid and belongs to parent institution; Part time paid faculty, and dedicated organizing staff.

Table 1. Models of Preparation of Teacher Educators

Areas of Teacher Education	Educational Certification and Degrees					
	Certificate	*Diploma*	*Degree BA/B.Ed.*	*PG MA/M.Ed.*	*M.Phil Specialization*	*Ph.D. Research*
Pre-Primary	▨	▨	▨	▨	▨	▨
Primary						
Secondary						
Higher Secondary	▨	▨	▨	▨	▨	▨
Nonformal Education						
Adult Education						
Open School						

Table 2: Areawise and Level Wise Teacher Education Programs

Table 2 describes area-wise and level-wise possibilities of 42 teacher education programs. Some of the very priority areas are marked therein.

Role-Wise Manpowr

It is expected that school system would require multi-functional and multi-skilled teachers and personnel for undertaking the tasks of teaching, research, curriculum development, co-peer-training for the 42 areas. Let us say there are five major activities teachers would be performing. That would mean 5 roles, 6 levels, and 7 areas. This would mean we have to plan for 5x6x7 i.e. 210 programs. In order to understand the emerging and varying roles of teachers, we have to prepare them differently and through overlapping strategies of organizations. One can have an illustrative look of following a framework of preparing and developing teachers for the system. Interdisciplinarity and credit weights assigned for an illustrative 100 Credit Master Degree program of teacher education of curriculum development for elementary education. Table 3 gives illustration for one program only. The semster of year-wise distribution is not shown.

Present Reality : Emerging Trends

There was TV serial called "Mungeri Lal". He lived in reality and dreamt about the preferred future. We too should be dreaming regarding definition, scope, personnel, and emerging areas of teacher education in the context of ground realities. We should know what are the present trends within

Leader → Areas ↓		*Teacher Educator 1=TE*	*Researcher 2=RR*	*Curriculum Developer 3=CD*	*Administrator 4=AD*	*School Teacher 5=ST*
A1	Pre Primary Education (PPE)			PPE-CD 5%		
A2	**Elementary Education (EE)**	**EE-TE 5%**	**EE-RR 5%**	**EE-CD example 50%**	**EE-AD 5%**	**EE-ST 5%**
A3	Secondary Education (SE)			SE-CD 5%		
A4.	Senior Secondary Education (SSE)			SSE-CD 5%		
A5.	Adult Education (AE)			AE-CD 5%		
A6.	Non-formal Education (NE)			NF-CD 5%		
A7.	Open Education (OE)			OE-CD 5%		

Table 3 : Rolewise Preparation of Teachers

teacher education. We conducted a brainstorming for identifying emerging trends. Some of these trends are: privatization, liberalization, globalisation, expanding distance education, and induction of new technologies, commercialization and standardization in certain areas. Some of the trends are over influencing teacher education.

1. Distance mode of education is taking over the regular face-to-face formal mode of teacher education. Self learning modules are being commercialized. Radio, television and other mass media are being increasingly used to supplement the formal learning experiences. This mode is user friendly, and is likely to help the disadvantaged groups of the society. Some of our universities are using correspondence system for organising different types and levels of teacher training programs. Some of the universities are playing the game of generating revenue for their own survival. High fee is charged. Commercialization is spreading. Crowds of trainees are admitted. Special needs of promising students are not attended to. Adequate physical facilities are not provided. The required professional teacher trainers are not available. The practical activities are skipped or organized in a slip-shod manner. Many unsound yet trained graduates are swamping the market. By the time they get the job training skills, if any, are washed away. In one of the meetings a senior official was favouring to employ fresh untrained graduates rather than inducting these half baked and stale trained graduates. Rather than helping the already sick system of school education, we become the agents of stagnation and deterioration.
2. A large number of philanthropists, volunteer organizations, and private bodies with and without approval of professionals, are entering into the arena of teacher education. Some of them could have doubtful designs impregnated with good explicit objectives but working with tangential implicit objectives. Some of them are unaided institutions. Some of these entrepreneurs have the tendency to go beyond existing quality controls.
3. There is a paradox of unemployed teachers and shortage of trained faculty in schools. The general supply of trained teachers in India is very large. In languages and social sciences, tne supply of trained teachers is much more than our needs. Science and mathematics teachers are not enough. Trained teachers in tribal and rural areas are in short supply. There is a dilemma of over supply of trained teachers in urban areas on the one hand, and on the other hand there is a short supply of teachers in the interior areas. Ceretain curricular areas are starving for teachers. Imbalances of growth have serious implications for future.
4. The reliability and predictive validity of admission procedures are doubtful. The pressure of admission for teacher training programs is increasing. Some persons are taking undue advantage by manipulating admissions. This has led to the emergence of centralized admissions for B.Ed. programs. Institutions have started using newly designed admission tests. This procedure claims to take care of regional disparities, possible misdeeds during the undergraduate examinations, falling standards of admitted candidates, and so on. But many a time these admission tests are not adequately validated. Measuring teaching aptitude, general reasoning, teaching attitudes, social sensitivity, communication skills, desired personality traits should be considered for enhancing the validity of these tests.
5. Centralized style of management is increasingly capturing new areas of educational administration. Admission tests are being organized centrally in many institutions. The teacher education programs are being designed at the state and sometimes even at the national levels. Employment in teacher education is monitored through centralized qualifications. The NET prescriptions of the UGC have increased the tendency of centralization and standardization of higher education curriculum. All these tendencies might sound good in the name of maintaining standards, but these go against the cherished principles of autonomy, diversity, relevance, creativity, and healthy multiple plurality. The individuals and the institutions are de-empowered. The local involvement, creativity, and initiative are hampered in the process.
6. Apex bodies at the national and state levels are making discordant efforts to improve and renovate teacher education. While talking about the recommendations of our Commissions and Committees, the MHRD, the UGC, the NCTE, the NCERT, the ICSSR, the SCERT's and many more such organizations are intending to play their role for improving teacher education. They have

been issuing guidelines from time to time for maintaining standards. Unfortunately, the results are not very heartening.

7. Innovations in teacher education are semi-professional. Content-cum-methodology, microteaching, simulated teaching, models of teaching, objective type evaluation are sample examples of accepted innovations. Most of these innovations are marginal in scope. These were formulated within the existing framework of standardization, objectivity, and dogmatic parochialism. Major trans-structural curricular innovations have yet to be conceptualized. We must design transcendental teacher education programs which are interdisciplinary in approach, trainee centered in focus, task based in mode, life long in scope, futuristic in outlook, holistic in perpective, and yet cost effective, feasible in logistic, and workable in a decentralized fashion.
8. Accountability and responsive code of conduct are emerging. Teacher education is also a profession of social responsiveness. Like medical profession, engineering profession, legal profession, teacher education is developing and implementing its own code of conduct and professional ethics.
9. Diversity in teacher education programs is emerging. It is being realized that the boundaries of teacher training can go beyond the preparation of teachers for merely elementary and secondary schools. Teachers for work education, teachers for higher education, teachers for nonformal institutions, teachers for informal system of education, teachers for preschool child care, teachers for adult education, and teachers working in other professional sectors of education also belong to the broad domain of teacher education.

Analysing Trends and Issues

There are a number of issues of facing teacher education such as Partnership/Collaboration versus Empowerment; Product Content versus Process Solutions; Home versus School Cultures; Equity versus Access; Competency versus Reflection Based teacher Education; Teacher Education as a Discipline versus Profession; Conformity and Standardisation versus Diversity; and many others. Let us understand its implications with the help of one such exemplar. This illustration gave us the needed strength to introduce Zero Lecture Program. (ZLP).

Standardisation Versus Unique Modeling

The illustrative example relates to conformity vs diversity of modeling of teacher education.

Formation of an enlightened society requires a quality input of a sound basic education which in turn needs efficient preparation of teachers trained through relevant and locally developed models of teacher education. The dictum of following a uniform standardized model of preparing teachers has not served the purpose of quality teacher education. This approach of uniformity in modeling in education helps in overcoming the drawbacks resulting out of a laissez faire approach. It promises upgradation of standards, provides easy controls, and respects values of equality and justice. But this iron jacket uniformity creates many new problems, such as, over-standardization, loss of meanings, decline in need-satisfaction, and undermining holistic views of life.

The second approach offers multiplicity of models for diversity of situations in our society. It looks like going to Bata Shoe Shop and then choosing a quality shoe and well fitting shoe at a lower cost. This industrial model looks very attractive. This approach is full of anomalies if you wish to have an enlightened and creative society. This approach seriously hampers capacity building process of localization of educational programs. It suffers from the chronic and intrinsic flaws of irrelevance of curriculum, meaninglessness of purpose, and de-empowering of teacher educators. The approach of choosing one suitable model out of a given few, helps perpetuating the habit of dependence. In other words, we are not helping the nation to become creative. The "followership" multi-model approach takes away the challenge of creative joy on the one side, and yet holds an attraction but misleading promises of democratization of educational processes. In order to empower teacher educators we must stop spoon feeding. We must differentiate between "Following a Model" and "Creating a Model". We must act with caution against the implicit drawbacks of the multiple-given models approach.

The third approach may be called unique and evolving model approach to improve teacher education. This approach employs the principle of creativity, proaction, abundance, and empowerment. Freedom alone does not help. We must also provide the skills to use freedom along with the will to use it.

Most of the persons do like this approach and yet many of them are apprehensive of its feasibility. Process of empowering assumes that teacher educators can (a) intake the task of context analysis, (b) identify the issues, dilemmas, concerns and questions of education-cum-teacher, education-cum-development, (c) identify and analyse problems and state them, (d) design practical activities at macro-micro levels in the field, labs, and simulator, (e) formulate empirical and theoretical explanations, (f) formulate new ideas, concepts, and theories concerning new teacher education, education and pedagogy (g) express the whole exercise in a multi media form to satisfy the needs of creation, expression, sharing, and evaluation. This approach to evolve unique yet context specific models is the answer to build new teacher. The framework should provide curricular guidelines for reformation of curriculum and its transaction.

Personalized Teacher Education : Zero Lecture Program

Encouraged by the excellent work of Hoshangabad Science Teaching, and that of Mirambika as an Integrated Teacher Preparation Institution, we started designing a unique program of teacher education. I wish to share with the readers that this is one major innovation which will show its worth. The innovation is based upon well enunciated assumptions, principles and theories. The ideas and actions of Rousseau, Dewey, Gandhi, Tagore, Maulana Azad, and Gijju Bhai have been the basic source of inspiration to us. The innovation lies in its implementation in the given budgets. It is an innovation aiming to improve teacher education in an holistic sense. It embraces most of the aspects of the system.

While designing this program, we recalled a few guiding principles and assumptions like (a) more the teacher talks, lesser is student achievement, (b) self designed and self management groups perform better than their counterparts, (c) integral environment covering physical, emotional, intellectual, and spiritual aspects is more conducive for growth, (d) learning, relaxing, working, and living like environment should integrate within institutions, (e) students should actively participate in the planning of learning environent, preparing for teaching-learning experiences, discussing academic, social and administrative issues, giving and receiving feedback, diagnosing and evaluating the scholastic and non-scholastic achievement, (f) owning the responsibility of all the events improve the personality of the students, and so on. It has its roots in general common sense, pedagogical wisdom and research findings. The experiment is in progress in Indore, and Delhi. A UNESCO sponsored publication gives the following report as an abstract.

Indore Experiment

In Indore, a small group of researchers decided to attempt an innovative program to reverse this trend. They conceptualized, planned, prepared and implemented an interdisciplinary, activity-based, decentralized program managed by participating teachers and students and using a multi-media and multi-model structure. Given a choice of approaches, the student teachers chose in favour of this "new" teacher education program called the personalized zero-lecture teacher education program. It is a "total immersion" program, with the group planning all things themselves including the physical layout of the room and all support facilities, the society and community work, relationship with program related agencies in the surrounding environment. The Institute of Education did not provide any additional resources to this volunteer group so as to keep a parity with other programs in the institute.

The "hot" events and current events having a direct and indirect influence on teacher education are the substance of many an unscheduled discussion. Generally, these discussions are frank, unstructured yet serious. Student teachers begin to learn the importance of freedom, trust and responsibility. Group presentations, conflict resolutions and value clarification etc start emerging from the discussions.

The given syllabus topics and curriculum are completed within flexible, small groupings. Presentation of prepared topics through various techniques like team seminars, quizzes, debates, interviews, panel discussions, role playing, games etc are carried out. A multi-media approach is used. Block presentations of each topic in the syllabus are completed. The presentation, feedback, discussion, clarification, expert teacher comments, reference reading, evaluation of the presentations by teams, assessment and grading of the presentations etc are carried out continuously by peer trainers. This continues over 2 semesters. No lectures are given by anyone. There are particular improvements observed in cognitive learning, personality changes, and skill improvements through this approach.

The student teachers, teacher educators, critical consultants, school employing authorities, school children, community and media persons have acknowledged the success of this program during the past five years that it has been running.

Zoom View of Personalizing Teacher Education Program

Tyagi, Chaya and Passi at Indore have been continuously developing, demonstrating, and disseminating the innovation. The following zooming overview of the program is prepared by Tyagi and Chaya. It covers different points such as, (a) flexible time management, (b) variety of modes of learning zero lecturing, (c) diversified and participatory evaluation, (d) personalizing environment, (e) learner's freedom, (f) teacher as facilitator, organizer and inspirer, (g) field linkages, and (h) outcome compared.

1. *Time Management*

- No centralized Time Blocks — Flexible Calendar
- Flexibility within Working Hours
- Managing Time on Weekly Not on Semester Basis
- A Joint Responsibility of Time Management
- Opportunity to Accommodate Flash Activities
- Autonomy of the Group

2. *Variety of Modes of Learning*

- Organising Contents and Deciding Specific learning modes
- Variety of Modes of Learning, Preference to Avoid Seminars Preliminary Phase, Learning Phase
- Overhead Presentations, Discussion Pairs, Small Groups, Rotated Successive Discussion Mode
- Group Designing Activities : Selecting Appropriate Activity, Planning Execution, Presentation, Discussion, Preparation and Discussion

3. *Diversity in Modes of Evaluation*

- Written, Oral, Performance, Rehearsed, Recorded, like Spontaneous
- Variety of Modes of Expression : Prose, Verse Skit, Cartoons, Gaming, Role Play, Debates, *Aap Ki Adalat*, Projects, and many more
- Peer Participation is Allowed Except for Written Mode
- About 50% Weightage by Peer Assessment
- Situational, Problematic, Improvement Questions in Semester Examination

4. *Personalizing Activities*

- Planning Setting, Dusting, Cleaning, Your Board Exhibiting Family Photographs & Mini Profiles, Family Events
- Sharing Diary, Sharing New Object Knowledge
- Silence/Prayer, Watching Nature, Acts of Kindliness
- Keeping Music Corner, Singing Folk Songs
- Managing On Going Course Library
- Dining Collectively, Sharing, Personal Liking of Local Food
- Displaying Educational Other Work of Students
- Arranging Innovative Excursions and Visits
- Arranging Meetings with Seniors
- Offering Opportunities to Speak on Some Important Events
- Celebrating Birth Days, Etc.
- Giving Opportunities to Manage Various Activities of Special Talent, Special interest: Special Schedule Tuesday Two Hours

5. *Learner's Freedom and Responsibility*

- Choosing What They Want to Study
- Learning Wherever They Like
- Working Under Conditions of Their Own Choice
- Designing Activities of Taste & Ability
- Adopting Modes & Means of Presentation According to Their Dispositions
- Expressing Answer the Way They Like
- Choosing their Own Group

6. *Role of Teacher Educator*

- Orienting Students to Activity Learning
- Helping to Locate Learning Resources
- Guiding Them Regarding Use of These Resources
- Assisting Them in Preparing for Presentation
- Assisting in Designing Appropriate Activities
- Monitoring the Execution of Activities
- Evaluating the Ptep-Zlp Program
- Maintaining Interest & Productive Participation
- Enhancing Sense of Belongingness and Help coordinating Among Groups
- Understanding Learner Difficulties & Potentialities

7. *Field Linkages*

- Teaching in Small Groups
- Organizing Important School, Family Functions
- Managing of Playgrounds, Libraries, Laboratories, etc.
- Participating in Routine Tasks
- Undertaking Developmental School Projects
- Assisting in House System Activities in Elementary Children Science Congress
- Undertaking Personalized Tutorials in Schools

8. Outcome Compared

- Achievement of ZLP Group is comparable to Parallel Group
- Higher Order Thinking and Understanding Emerges Better in this Group
- Values, Confidence, Proaction, Cooperation Develop at Higher Deeper Levels
- All But Weaker Section Students Benefit Helping
- Innovation is Economic in Time, Money, Feasible, Liked
- Specialized Expertise of Subjects is not that Essential
- School Employers Have Liked Them
- School Preferred Them for Employment

Conclusions

The changing views, higher expectations, and enacted responsibility of teacher demands proactive roles from teacher educators and concurrently there is need to free teacher education from the age old shackles. New institutional arrangements in the form of centralized campus model, coordinated decentralized — embassy model, parking model, and learning waves model with any combination and permutation have to be made to support neglected lot of teacher educators. New programs covering five roles, six levels, and seven areas have to be initiated. Potential institutions should be supported to work on the lines of unique model development. Necessary encouragement, support, and guidance has to be provided. The responsibility is with those enjoying power and status and not with the underprivileged teacher educators. Development roles must supersede the regulatory functions. Accountable responsibility should be directive principle for the new hopes in teacher education. Dreaming dreams is useful and not dreaming is dangerous. ZLP was one such pipe dream of a few researchers at Indore — "Have faith in our trainees, they are a source of ideas, direction, energy, and trust".

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Innovation, Creativity and Entrepreneurship

D. C. Surana*

Introduction

The industrial society dawned on this globe by the innovators-creators combine with the support of traders-entrepreneurs who acted as catalyst. They mobilised resources to provide for the requisite capital, entrepreneurial ability, business acumen, and above all the vision to foresee the future. The need to fulfil the wants and needs of the masses led to mass consumption which required larger capital for mass production and perhaps, at this stage the roles of innovators-creators and entrepreneurs were reversed. The second generation entrepreneurs who had capital and vision, then started hiring the innovators to usher in an industrial society.

The state joined this onslaught by offering to provide capital to the innovators with entrepreneurial abilities. Thus the first generation entrepreneurs blossomed. They started their own small scale enterprises or small scale industries based on their innovation. Thus they became job providers rather than job seekers thereby partially alleviating the problem of unemployment. These first generation entrepreneurs were essentially a blend of an innovator, creator and entrepreneur. The innovators largely depended on innovation essentially of a new idea, a new product, new process, new market, new design or anything new that they could think first time and had the energy and motivation to implement these new ideas to create something newer which did not happen or exist hitherto.

Innovation and Creativity Club

We at the Faculty of Engineering Jai Narain Vyas University (JNVU), Jodhpur organised an experiment by starting a students club during the 1994-95 session and called it "The Innovation and Creativity Club" with the sole objective to provide an opportunity to those potential students who were a class by themselves and had the ingredients to become entrepreneurs. Initially the entry to the group was restricted only to those who had some original idea or thought. Thus, the Club had a very small membership but all these members were highly initiated lot led by a team of motivated young teachers who appreciated innovation, creativity and encouraged and stimulated these young bright, energetic and innovative students. In the first year itself three new ideas were floated which were then implemented with the financial assistance coming from different sources including the Department of Science and Technology, Govt. of Rajasthan, Jaipur. The three ideas floated were 1. Harnessing Sunlight through Optical Fibers (Appendix-1) 2. Automatic Satellite Dish Positioning System (Appendix-II) & 3. Improved Air Cooling System Design (Appendix-III). It will be observed that all these ideas were either new products or an improvement over an older product.

At the product level the first stage of implementation is complete and it is hoped that the second and final stage will be completed in the next session i.e. 1995-96 by which time these students will complete their programme in the Faculty and hopefully pass out successfully. These students have now been encouraged to undergo an entrepreneurship education/training programme given in the institute itself by its Entrepreneurship Development Cell. Formation of such clubs in technical institutions should go a long way to attract young technical graduates to entrepreneurship and become self employed.

At the School Level

The club provided a forum for direct interaction with the student members which in turn provided us an opportunity to peep into their mind-set, explore their aspirations, watch their behavioural patterns, know their deprivations and finally help them overcome the frustrations, if they had any. One of the impressions that we gathered was that they were deprived of such opportunities in the past including the school days. It is at this level that they wished they were encouraged to participate in the innovative activities, to take upon new challenges and try newer ideas. At this point it is necessary to elaborate the word 'new ideas'. The new idea may relate to

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products, processes, methods, design, marketing, management, finance, services, information technology (tools, techniques and applications), manufacturing techniques and so on. Alongwith these opportunities they should also have been exposed to and made aware of entrepreneurship as a superior alternative to job employment through lectures from successful entrepreneurs, followed by visits to their enterprises, motivational measures, video presentation of success stories. The study was undertaken keeping in mind the firm belief and conviction that entrepreneurship is not a matter of heritage but is entirely a manifestation of such potentialities that any individual born in any environmental or neighbourhood may posses. Any person can be groomed and developed as an entrepreneur by developing a certain set of traits and aptitudes. These traits and aptitudes should be seeded at the level of the school.

Concluding therefore that two things should take place at the school stage: One — that the students get an opportunity to take challenges, think independently and originally, and two — to implant the conviction that entrepreneurship alone can fulfil their dream, desire and aspiration.

At the College Level

At the college level the students having innovative ideas and creative inclination should form into a group — "The Innovation and Creativity Club". The entry to this club should be restricted in the beginning so that only those who have innovative flair get entry into this club. This can be determined by asking all those who wish to become members of this club to give a write up of about 500 words on their innovation within a short period of say a week or ten days followed by an audio visual presentation. This will screen out all those who intend to join this club only to add to their bio-data. The club will initially have a small membership led by a very highly initiated team of motivated teachers. It is here that the group discussions and brain storming sessions be encouraged and regularly held to testify and improvise individual ideas which will sharpen the innovation that the students have in mind. The academic departments in the college should provide technical support to this club so that the ideas can be implemented into a new entrepreneurial product and project. Over the years when the club gets going other students with desire to establish small business or small scale industry should be permitted to become members and participate in its activities. This will have induction effect on the onlooker students.

Alongwith this activity where the motivated innovators are encouraged in the act of developing new products and ideas, an opportunity should be provided for entrepreneurial education and training outside the curriculum with the singular aim to see them flourish as successful entrepreneurs. This should be in addition to their academic attainment. Thus separate programmes must be devised to arm them with sufficient knowledge, techniques and tools to work out technical feasibility, economic viability and marketability of their ideas and products. They can with this knowledge prepare excellent project reports, bringing out the profitability and profits in the existing and futuristic market condition for the venture that they may wish to undertake at the end of their education career in the institute. The institute which has excellent entrepreneurial development record on one side and industrial research on the other should be funded to start a separate postgraduate programme in entrepreneurship as has been brought out in an article published by the author.[1]

Entrepreneurial Nurseries

The real difficulty the young students face is when they finish their formal education and would like to fructify their ideas and set up their enterprise. It is here that they need direction so that their innovative ideas are not lost in wilderness. The government should step in here and extend facilities to provide entrepreneurial nurseries integrated with the educational institutions (preferably within the institute's campus). The nurseries could be in the form of work-sheds equipped with common infrastructural facilities like communications, power, water etc provided by the state with all technical facilities of the educational institutes accessible easily at all times to the students in order that they may test, improve and fructify their ideas into saleable commodities and services. Financial support should be provided by the state which acting as a promotional and funding agency may evaluate the project and watch its progress. The financial support should take care of the personal needs so that they invest all their energy and time in implementing the ideas instead of trying to fend for themselves by some make shift means which lack any ultimate purpose. The expenses incurred in the process should be treated as a soft loan recoverable once the commercial ventures get established and start showing profits. From the foregoing discussion it is clear that the government and the institutions should take the following initiatives to bring up entrepreneurs.[2]

1. Bring together innovative students to form Innovation and Creativity Clubs where students receive encouragement and guidance from the faculty to try out and experiment with their ideas.
2. Provide technical and infrastructural facilities in the form of entrepreneurial nurseries.
3. Provide adequate entrepreneurial training and education, so that they can prepare presentable project reports which will take them a step forward in the direction to transform them into successful entrepreneurs.
4. Appropriate personnel from financial and infrastructure institutions should visit the nurseries to evaluate their projects and project reports to register them as entrepreneurs so as to enable them to receive assistance for land, loan, water, power, subsidy etc, whenever they are ready to start on their own.
5. From nurseries they should move to 'Technology Parks'. In the next and the final stage they should shift from the technology park to a proper industrial estate where they will be completely on their own and will have to make all arrangement for themselves. Now they are completely transformed into entrepreneurs.

Conclusion

In conclusion, if entrepreneurship has to be taken as an alternative to wage employment, educational institutions and government organisations will be required to take the following actions:

1. *At School Level* :

- — Conduct training programs to bring about attitudinal changes in students to become self employed.
- — Promote and encourage the spirit of innovation and creativity in the students. Imbibe the spirit of taking challenge.

2. *At the College Level:*

- — Starting of Innovation and Creativity Clubs bringing out the inherent potential in young students.
- — Conduct entrepreneurship development and guidance programs to facilitate them to prepare their own project reports.
- — Provide space for entrepreneurship nurseries.
- — Make the institutional facilities freely available to innovative students.

3. *At the Government Level:*

- — To construct work sheds with common facilities in select institutions to create entrepreneurial nurseries.
- — Provide funds for innovative projects which should include up-keep of the budding entrepreneurs.
- — Ensure financial and infrastructural incentives and assistance to these budding entrepreneurs at the nursery level.
- — The Department of Science & Technology, Govt. of India should further delegate the power to sanction financial assistance for a student project to the Head of the institution concerned who in turn should form an expert committee to evaluate a proposal. On the basis of its recommendation sanction can be issued by the Head of the institution concerned. This will curtail the undue time taken between inviting the application to the final sanction of the project. The Dept. of Science & Technology should reimburse the funds to the institution concerned. This will encourage innovation and consequently develop entrepreneurship amongst the students of engineering and technical institutions.

References

1. Surana D.C. "Bringing up Entrepreneurs", Presidential address during the two weeks Teachers' Training Programme on Entrepreneurship Development, 12-27 June, 1995 at Polytechnic, Jodhpur, organised by the Entrepreneurship Development Cell, Jai Narain Vyas University, Jodhpur. Subsequently, published in the Compendium of lectures.

2. ————————. "Linkage Through Entrepreneurship" delivered lecture in "National Conference on Entrepreneurship Development in India — Retrospect & Prospect" during 23-25 Jan '90 at Delhi and subsequently published in *University News* (a publication of the Association of Indian Universities, India), April 9, 1990.

Appendix-I

HARNESSING SUNLIGHT THROUGH FIBER OPTICS

The idea sprouted in the starting of my college days. Seeing the optical fiber lamp which transmits light emitted from a filament bulb, gave rise to this concept. It required experimental proof. My experimenting with a small bunch of fiber and its success, made me interested in the whole concept of illumination through sunlight using optical fiber which culminated in my writing and presenting a paper on the same. Government of Rajasthan, Science and Technology Department funded the project. Consequently, I worked on the project and made the working model of the same naming it 'Harnessing Sunlight Through Fiber Optics'. A club was started in the Faculty under the patronage of the Dean, which was named as "Innovation and Creativity Club". The idea was discussed extensively in the club and the members contributed a lot to it.

This system was aimed at reducing electricity consumed for daytime internal illumination. The sunlight travelled through the optical fiber bunch and came out from the other end, but the intensity was very less for internal illumination. Hence concentration of light was required. The light was concentrated using a bi-convex lens assembly, and then projected on bunch of optical fiber. The concentration of light heated the fiber and after a few minutes of exposure the fibers were damaged. To prevent this a cooling system was devised. The light was made to pass through a tube filled with water, before it was directed on the fiber. Water cooled the light by taking away the heat. This concentrated sunlight was then channelised to various enclosures such as rooms, halls etc. The light emerging out from the other end of optical fiber bunch, was then diffused to illuminate interiors. A tracking system was also devised to make the concentrator track the sun in order to utilize maximum amount of incoming solar radiation.

The heat extracted from the cooling tube can be further used for various purposes, for example air-conditioning, heating etc. The concentrator can be made to track the sun automatically using a microcomputer. A photovoltaic module made of high efficiency cells, located indoors can be used in conjunction with this system (to utilize the unused light and some part of the concentrated light) to charge a battery which will be required to illuminate the rooms when no direct sunlight is available.

Besides saving electricity, the light from this system provides a better contrast, right level of U.V. radiation and is free from harmful radiations generated from artificial sources of light. As the sunlight is directly used for illumination, without converting it into any other form of energy the losses are less hence the efficiency is high. The output of the system can be in the form of visible light, heat and electricity.

I had undergone a training arranged by the Entrepreneurship Development Cell (EDC) of our faculty, for developing the traits of entrepreneurship. The training helped me a lot by showing me the way to become a successful entrepreneur. At this point of time my aim is to develop a real life product of the working model and exploit it economically. The training imparted by EDC will be helpful in doing so. I wish that such exposures should be given at the school level to guide the students from the very beginning.

Appendix-II

AUTOMATIC SATELLITE DISH POSITIONING SYSTEM

Now a days satellites are scattered all over the sky and are ready to give infotainment all the day. This gives rise to cable industry.

One day I was in the office of a cable operator. I saw that his roof top had dish antennae and he was busy in changing the orientation of dish from one satellite to another. It took him some time to adjust the dish accurately. This gave me an idea of making a device which can be used to position a dish automatically and save time. The same device can be used for different satellites without wasting much time for adjustment.

The problem is how to track the desired satellite and make the dish move towards that satellite. From data books we found the exact position of satellites in the space. We knew the longitude and latitude of place where we have to install the dish. Using these data we calculated the azimuth and deviation angles for a particular satellite. Now all that remains is to move the dish to the angle of azimuth and deviation. My gadget does the same thing. We have to give the data per azimuth and deviation via a sample punched plastic card. Device reads the data and it rotates the motor in the desired direction and at the same time it observes the angles moved by the dish and compare it with the input data. When the desired position is reached it stops the motor. When we withdraw the card from the device it brings the motor back to the rest position. This makes the system fool proof.

Two motors are used in this system one for azimuth and the other for deviation angle. For the sake of economy this system is designed without any microprocessor and uses simple bidirectional motors and digital circuitory which uses simple IC counter and logic gates. This system has a high degree of precision since it takes 16 bit input. So least count per angle settings comes out to be $360/2^{16}$ degree = 20 seconds which is more than enough.

System reads the card via simple contact switches or optical sensors. I presented this product in a national competition organised by an IEEE Students Chapter at Delhi and got the First Prize

Now I want to setup my own industry to make my product commercially available. For this purpose I will attend Entrepreneurship Development Programme. Our institution arranges such type of programmes every year and I am sure this will help me to launch an industry successfully.

Appendix-III

IMPROVED AIR COOLING SYSTEM

We find the sound of gust of air and nuisance of humidity and occasional throw of water drops from air cooler irritating. One day I conceived an idea to change its conventional design to a form in which all these problems could be eradicated.

We could very well make out that sound of this gust of air is due to the hollow space (body) behind the fan and due to the speed of air. If fan is shifted to the rear of the cooler and the wet pads are erected in the front of fan, two major problems can be solved viz. the direct draft of air in the from of gust and the uncontrollably rising humidity.

The pads are arranged in staggered position in front of the fan, as a result of which the air changes the direction repeatedly resulting in the ceasing of water droplets. This assembly acts as a silencer also thereby reducing the sound. As the area from which the air is finally thrown is increased the intensity of wind is reduced. Finally we get cool breeze with controlled humidity and little gust. Also the pump and fan are not exposed to the humid air consequently their life is increased. Lot more things are required to make the cooler effective.

When the cool air is added to a room equal amount of waste air from the room has to be thrown out. This air which is thrown out, though stale and unfit for us, is cooler than the outside atmosphere. If a heat exchanger can be fitted to the cooler which pre-cools the air intake of the cooler using the stale air then the intake air's temperature can be reduced. The heat exchanger prevents transfer of moisture thus cooling air without adding humidity. The temperature of the intake air can then be further reduced by adding some humidity in the cooler. The pads can change the area of pads exposed to the air thus humidity can be controlled. A timer device has been made to control the timing of pump. The pump works for small periods intermittently. The time durations can be controlled manually/automatically. When the pump is running the cooler is throwing wet air hence increasing the humidity. After some time when everything in the room is relatively wet the pump shuts off. This results in the dry air from cooler. The moisture from the surfaces takes the latent heat from the objects and evaporates thereby cooling the bodies.

A microprocessor to control the timing of pump, the direction of pads, etc. can be used to further make the system more effective and to use the water more judicially and effectively.

University News
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My Favourite Reading

KRSNA WORSHIP IN ORISSA

Bidyut Lata Ray*

The major religions prevailed in Orissa (past Odra, Utkala and Kalinga) from the pre-Christian period to date are Jainism, Buddhism, Saivism, Saktism and Visnuism. In Kalinga, Jainism retained its dominant position up to the end of the 7th century. Buddhism started to gain ground in Orissa from the 1st century A.D. onwards. It was flourishing in about 641 A.D. when Hiuen Tsiang visited the country. The last ruler known to have supported Buddhist religious establishments was Gajapati Mukundadeva in the 16th century. Saivism is traceable from the 4th-5th century onwards. In the post-Gupta period it became the strongest Hindu sectarian movement in Orissa. It remained the religion of the majority of the people of Orissa down to the 17th century. Saktism, a religion older than Saivism, has its extremely powerful hold on the people of Orissa till today. From the 8th to the 11th centuries, the Saktas were most generously supported by the rulers of Orissa. However, Saktism witnessed an important rival in the 16th century at the wake of Vaisnava movement in Orissa and particularly, due to the spread of Caitanya's neovaisnavism thoughts in the coastal-belt of the state. Visnuism was by far the latest major Indian religion to reach central and coastal Orissa, the area where the temple of Lord Jagannatha stands as the symbol of the core of Vaisnava faiths and movements in the land. Nowhere in the whole region of Orissa and Kalinga is Visnuism traceable prior to the Gupta period. It advances towards Orissa from the South and from the west. During the rule of Matharas I (ca. 364-540 A.D.), Visnuism advanced into Kalinga where it enjoyed royal protection from the time of Anantasaktivarman onwards.

Krsna component of Vaisnavism has achieved a unique and separate place in the chronology of Visnu-cult and thought in India. In the social lives and cultural traditions of Indian people, Srikrsna is one and only one deity reflected the most. He is considered as the Ultimate. He is the Brahma himself. He is eternal. He is unperishable. He can be transformed form one from to another. Indian kavyas, puranas and philosophical texts describe ten such incarnations (Dasavatara) of Srikrsna with the activities of each one. Such narrations are very much lucid and stylic. The origin and development of Krsna-cult in India is felt from historical, archaeological, inscriptional, architectural, social, cultural and puranic records and representations. In course of its progress, Krana-worship gradually spread into the tract of Utkala and finally attained a paramount position in Orissa when Caitanya considered Lord Jagannatha to be Krsna himself.

The book *Odisare Krsna-upasana*[2] written by a renowned oriya essayist and Critic Professor Brundaban Chandra Acharya, throws light on the origin and development of krsna-bhakti in Orissa. This manuscript, though came to light only in July, 1994, embodies in itself the progress of Krsna-cult in Orissa from the past to the present. In order to establish his viewpoints, the author has collected evidences from Orissan history, archaeology, architecture, sculpture and literature. He has also taken the help of Sanskrit and Prakarta literature to gather proofs for krsna-worship in Orissa. According to the author, the ingredients of krsna-worship as reflected on the arts and crafts on the land of Visnu and as excavated on the walls of various beautiful temples of Orissa have been, for the first time, congregated and discussed here in this text. The astounding artistic-skills of the Ubkaliyas help us in finding the roots of the origin and the gradual development of krsna-Upasana in Orissa. Thus, the topic 'Krsna-worship in Orissa' has been portrayed in the book through five chapters with the following headings :

Chapter 1 : The formative phase of krsna-worship

Chapter 2 : Evolution of Bhagavata-cult and the archaeological study of krsna-worship in Orissa

Chapter 3 : The tradition of krsna-worship in Sanskrit and Prakrta literature

Chapter 4 : Indications of Krsna-worship in the arts and architecture of Orissa including the temple architecture

Chapter V: Conclusions.

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The book is an excellent treatise on the crystallization of krsna-cult in Orissa. It extolls the origin and development of Bhagavata-Dharma in the land of Visnu (Land of Purusottama-Jagannatha) which resulted finally in the form of Krsna-Upasana in Orissa. This in turn, led to the creation and practise of Krsna art, thought and culture by the people of this region. Acharya has taken utmost care in focussing the various component of Krsna-worship in Orissa which include the reflections in the arts, architecturer, sculptures, literatures and thoughts of Utkaliyas.

According to the author, the Bhagavata Dharma originated sometime very close to the composition of the Mahabharata. Due to the union of eternal cult and the philosophy of Gita, the real picture and the analysis of Bhagavata cult are found in the Pancaratra-Samhitas written during Gupta-age. Narada-Bhakti-Sutra and Sandilya-Bhakti-Sutra offered a definite shape to the Indian Bhakti movement. The Albara-group of Bhaktas of South India displayed various components of practise of Bhakti. Though, both 'Rama' and 'Krsna' are regarded as Parambrahma, the Puranakaras have chiefly aimed at establishing Srikrsna as Parambrahma. In this context, the role of Bhagavata Purana is unique. It influenced the people the most. It was written in some part of South India. Bhagavata Purana has been accepted as the outstanding text of the Vaishnavas of India worshipping Krsna and practising Krsna culture. Krsnavatara is imagined to spread the lila of Srikrsna and to provide happiness to the devotees of Bhagabana-Krsna. He is thought of mostly as Paramatma, Parambrahma and the symbol of Jnana. Still, in the later part, Srikrsna is depicted as the love-himself.

Krsna of Brundavana is depicted as the symbol of supreme love. All the activities of Srikrsna (Purusottama) have been exhibited in Gopalila. The external love of Parambrahma Srikrsna has achieved full attainment in His love towards Gopis. Acharya Nimbarka, was the first to worship the dual image of Radha Krsna. Owing to the acceptance of Visnu as the original deity of Srngara-rasa in the Indian Sastras and Puranas, unseen activities of Srikrsna were depicted in the puranas and kavyas in connection with His Gopalila. The devotional inspirations of Srngara-rasa of Krsna-lila were reflected in *Krsnalilamrta* of Bilvamangala and *Madhura Padavali* of Jayadeva. Still, the devotees of Srikrsna had to wait for some more time to worship Sriradha as the consort of Srikrsna. The contribution of Orissa in spreading and practising Radha-cult is memorable of all. While Srikrsna is Cinmaya, Cidghana, rasamaya, Radha is the image of happiness. Its foundation is the causeless devotion. Krsna-worship is the best in the way of love and affection. Those who worship Srikrsna in the path of raganuga premabhakti can reach Parambrahma Srikrsna easily. Here, Mukti (salvation) is totally ignored, but Bhakti (devotion) is mostly demonstrated. This is also nothing but prembhakti.

The first appearance of the twelve-syllabled vijamantra of Krsna-worship included in Bhagavata cult is from an inscription of 6th century A.D. The sweet relations of Srikrsna with the maidens of Gopa have been pictured in the 7th century inscriptions of Udayapur belonging to the king Aparajita. From the angles of religion and culture, this Krsna-cult was accepted as the most influencial and important religious thought during 6th-7th century A.D. Mathura was the ancient alter of this religious thought. Thus, it is guessed that the Bhagavata dharma relating to Krsna-worship spread throughout India from Mathura.

The kings of Matharas in Orissa were the chief patrons of Vasudeva-Krsna-Worship. It is guessed that they were worshipping Narayana in the shape of Vasudeva-Krsna. It is learnt from the inscriptions that Krsna-worship was popular in Kalinga towards the last part of 5th century A.D. The influence of Bhagavata purana in this direction is very unique. The first and foremost indication of Krsna-worship in Orissa is observed from the Baranga Copper-plates of Nanda Pravanjan. Evidences of Krsna-worshippable Bhagavata-Dharma patronised by the contemporary Nala and Sarabhapuriya rules is available. In this context, the change in the religious ideas of Bhaumakaras is the most notable. According to the narrations of Bhilari stone inscriptions, Laksmanaraja, the king of Chedi dynasty defeated the king of Kosala and received a beautiful Kaliya-idol as presentation from Odra king. This was the image of Srikrsna. This idol was adorned with various precious metals like gold. It is proved beyond doubt from this that krsna-image in Orissa under the influence of Bhagavata-purana was being built with different precious metals during the last part of 9th century A.D. It is thus evident that Krsna-worship spread in Orissa from 9th century. Purusotama-Jagannatha of Puri was accepted as Krsna towards the later part of the 10th century. The record of Srikrsna as the worshippable god in the inscriptions of Ganga dynasty is noticed from the Dasagoba Copper-plates of Rajarajadeva. In this Laksmi-beloved Krsna has been prayed. The pin-pointed and the strongest inscriptional evidence of Krsna worship in Orissa is available from the Anantavasudeva-inscriptions of Chandrikadevi. From the combined influence of 'Bhagavata Purana' and 'Gitagovinda', it is well understood from this inscription that Sri Jagannatha is the other form of Srikrsna. But the worship of GopiJana-Vallabha Srikrsna of Bhagavata purana was described here in lieu of Radha-Vallabha Srikrsna of Gitagovinda. The stream of eulogizing the glory of Krsna-Jagannatha flew in Orissa in a later time. The mahatmyas of Krsna-Jagannatha have been depicted in the Gopinathapuran-temple-inscription that belonged to the suryavamsi-king Kapilendradeva's period. Treating Srikrsna here as both Balagopala and Gopijana-Vallabha is a note worthy specification in the Jagannatha cult and the religious tradition of Orissa.

It is thus clear from the above discussions that Sricaitanya initiated Krsna-worship in Orissa. Long before him, the Gitagovinda of Jayadeva had an unlimited influence over the people of Orissa. Nimbarka, Vallabha and Sricaitanya et al had considered Radhakrsna of Gitagovinda as the Jivatma and the Paramatma or the devotee and the Lord. The dualistic vaisñavite meditators of Orissa were the chief followers of this tradition. The Jayavijya stone-inscriptions of Srimandira provides a strong proof of it.

After two hundred years of the composition of Gitagovinda, Sridharasvami, the great pandita of Utkala had written a prose-version of the 'Bhagavata Purana'. This enhanced further the stream of Krsna-Bhakti in Orissa. In a later time, Pandita Ray Ramananda established the Vaisnava-rasa-texts by composing the drama 'Sri Jagannatha-vallabha'. The creation of 'Bhaktivaibhava' drama and 'Bhakti-bhagavata' Kavya of Kavidindima Jivadevacarya left a strong footing for the course of Krsna-bhakti movement in Orissa. After the spread of caitanyaian bhakti-cult, the descriptions of Krsna-bhakti and Krsna-lila were amply included in the Sanskrit and Prakarta texts written in Orissa.

The period of Somavamsa-rule in Orissa noticed the highest upliftment of the culture of Utkaliyas. The Gopala-temple of Jharial of Ranipura gave the first authentic indication of Krsna-upasana in Orissa. This place Ranipura is famous in the puranas in the name of Somatirtha. The idol of Gopala was being worshipped in this temple. It has been accepted as the first and foremost indication of Krsna-worship in Orissa found in the temple architecture and sculptures of the state. In this context, Acharya has also cited the example of one Visnu-image of Saintala of Balangir district of Orissa. Dasavatara images exhibited here are very important. It was built in the 8th century A.D. It is observed that the Dasavatara images are carved around the four-armed Visnu-idol in the middle. The chronology of Dasavatara as reflected here does not match the chronology of ten-forms viewed in other parts of India. The chronology of this Dasavatara has been exactly displayed in one writing carved on the temple of Barahaperumalla of South India, which was built in the 8th century A.D. This chronology, in later years, has been exactly followed by the Oriya poet Jayadeva of 12th century A.D. This unveiled the fact that the worshipped deity Srikrsna has ten-fold forms as narrated in the Bhagavata-Purana. The chronology of Utkaliya Dasavatara as has been displayed in the Visnu-image of Saintala of Orissa thus adheres to the stream of Jayadeva's conception of Dasavatara. Such a tradition is fully influenced by the South Indian culture.

From the collections of Orissa state Museum at Bhubaneswar, we come across a magnificent sculpture of Kaliyadalana image that belonged to 7th century A.D. It is hence understood that the carvings relating to Krsna-lila in Orissa were due to the impact of Bhagavata-Purana. Krsna-images carrying the hill Govardhana are notable in this respect. The Govardhandhari Krsna-idol found from Dolasahi of Balasore district of Orissa and kept in the museum of Sambalpur University are noteworthy in this connection. Both the images are four-armed and standing in a three-phase posture. It is very curious to observe the flute-playing, cow-herd, Krsna-image on the walls of Muktesvara temple and the scene of curd-churning carved on the famous Lingaraja temple of Bhubaneswar. Towards the end of 12th century A.D. many gayful happenings of Srikrsna's Gopalila were popular among the people. The view of butter-stealing drawn on the walls of Meghesvara temple and flute-carrying Krsna image noticed on the Cakra of the great Konarka temple are of special attraction. A Visnu-Krsna image found from Dharmasala of Jaipur district of Orissa is important in this respect. But this Visnu-krsna idol is four-armed. Such four-armed Krsna-idols are also available from distant Southern-tracts. In due course of time, the concept of four-armed Vasudeva-Krsna-murtti originated from this. Though, both the Vasudeva-Krsna images of Manjusa and Kulada are four-armed, they are originally Krsna-idols because of the presence of club in the lower left-arm of each image.

Krsnavatare tu gada vamahaste Prasasyate

Gradually, two-armed Gopinatha image originated from this and exhibited in the image architecture of Gopinatha images collected from different parts of Orissa. The two armed Gopinatha image carries the flute and, He is always surrounded by the cattle and the maidens of Gopapura. Ksiracora Gopinatha of Remuna (Balasore district of Orissa) and Gopinatha image of Dandamukundapura of Dharamsala (Jaipur district of Orissa) are two-armed, flute carrying, cattle-watching and Gopi-Gopala surrounded.

Drawing the conclusion, Acharya opines that Srikrsna was worshipped everywhere in Orissa as Parambrahma after 16th century A.D. The descriptions of various rites and festivals of Krsna-worship in the religious texts of Orissa, innumerable reflections of Krsna worship in the temple architecture and sculptures of the land, and emotions felt in the Karyas, songs and stories related to Srikrsna provide us ample instances of wide popularity of Krsna-cult in Orissa. It is observed that such a tradition continues till the modern age.

Thus, the book *Odisare Krsna-upasana* includes the facts pertaining to the origin and development of Krsna-worship in Orissa starting from the ancient times to the modern age. It also tries to focus on the fulfilment of Krsna-upasana with the union of Krsna and Radha in a later time. In this perspective, the contribution of Orissa has been established with proofs in a lucid and coherent manner. Collecting evidence from Orissan history, architecture, archaeology, sculptures and literature, the author has made a benevolent attempt to enable the readers to be aware of all the possible components of Krsna-worship in Orissa through this small and unique treatise. He has also given sufficient stress on Sanskrit and Prakrta language and literature contributing to the origin and development of Krsna-worship in Orissa. Above all, the book under analysis provides enough material for the researchers engrossed in searching the germination and branching of Krsna-cult in Orissa particular and in India at large.

References

1. Eschmann, A., Kulke, H., and Tripathy, G. C. *The Cult of Jagannath and the Regional Tradition of Orissa*, New Delhi, Manohar Publications, 1978, P.5 and fn.5.
2. Acharya, B.C. *Odisare Krsna-Upasana*, Cuttack. Grantha Mandira, 1994, Pp.1-170.

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Advt. No. 5/96

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REGISTRAR

Our Livestock Wealth

Dr. A. L. Chaudhry, Chairman, Agricultural Scientists Recruitment Board, delivered the Convocation Address at the fourth convocation of the Tamil Nadu Veterinary and Animal Sciences University, Chennai. He said, "There is progressively greater appreciation of the fact that agriculture means the optimum exploitation of soil-water-plant-animal-and man relationship. This has led to a gradual realisation that agriculture has to be diversified and that new strategy of agriculture development should include simultaneous and parallel development of the livestock wealth of the country in which we are unique in having not only the largest population but also the widest genetic diversity." Excerpts

The history of post independence Indian Agricultural Development can be summarised in three words—scarcity, self-sufficiency and surplus. Immediately after independence on the food front we witnessed the ship-to-mouth situation. Heavy monetary resources had to be diverted towards import of food grains. The foodgrain production in 1950-51 was a mere 51 million tonnes when the country's human population was 361 million. The 1966 drought was the testing time for the country. With the estimated 196 million tonnes of foodgrain production during the current year and about 31-32 million tonnes being reserve stock, the country is in a reasonably happy situation as far as the food stock is concerned. However, with the food security having been reasonably attained nutritional security and food quality, in addition to attaining export targets from the agriculture sector has to be the national concern.

The National Agricultural Research Policy resolution has highlighted the needs and challenges before Indian agriculture and has identified research as one of the critical inputs. The policy statement aims at achieving dynamic and diversified growth in agriculture and livestock sectors, which can provide food and nutritional security, raise rural income and employment, promote balanced regional development, in addition to it being eco-friendly, resource conserving and sustainable. The national science and technology system needs to address these issues critically.

Over the years, and particularly after independence, the country has developed a very strong National Agriculture Research System (NARS). The Indian NARS is not only envy of the developing countries but has won international appreciations and awards for its outstanding contribution. It comprises 49 Central Institutes, 9 Project Directorates, 30 National Research Centres, 165 regional stations, 77 All India Co-ordinated Research Projects with about 1100 operating centres, more than 260 KVKs and 28 State Agricultural Universities and a Central Agriculture University and 4 ICAR Institutes with deemed university status. In all about 6500 scientists in the ICAR and more than 22,000 teachers and scientists in the SAUs comprise the scientific body of the National Agriculture Research and Education System.

The national achievement of attaining self-sufficiency in food grains had been possible due to untiring efforts of the scientists and the hard work by the farmers. However, the achievements in the livestock sector have also not been mean. The country has vast livestock population, 197 million cattle, 75 million buffaloes, 54 million sheep, 110 million goats, 10 million swine, 310 million poultry with varied range of production levels. Considerable efforts have been made in raising the animal productivity in terms of food (milk, meat and eggs) and industrial raw material (fibre, skin and hides) during the post independence period. The achievements made in the area of dairying and poultry in particular are very impressive. Milk production in the country has increased from 17 million tonnes in 1950 to 52 million tonnes in 1990 and has crossed 60 million tonnes by the end of 1995. The per capita availability of milk increased from 129 to 174 gm during this period in spite of the exorbitant growth of human population. Egg production has registered manifold increase (from 5 to 24 thousand millions) and broiler production has jumped from 1 million to 240 million during the last three decades. These figures clearly indicate that animal husbandry activities in the country are slowly growing from tradition bound localised occupation to a progressive scientific base rural industry. Animal husbandry contributions make about 25 per cent of GDP from the agriculture sector.

Fisheries play an important role in food production, income generation, providing employment and earning foreign exchange. The Fisheries sector, especially its marine component has tremendous export potential. The demand for fish and fish production has been growing rapidly in the recent past, but most of the traditional sources of fish such as marine stock are already being exploited and in many cases over exploited. The 8th plan aimed at increasing the productivity of fish from 2075 kg to 2500 kg per hectare per annum and increase the area under fish culture from existing 3 lakh hectares to 4 lakh hectares. This demands expanding the area under aquaculture and improvement in fishery management.

Till recently, agriculture in the country was a part of the nonchalant way of rural life providing, by and large, only means of bare subsistence. Fortunately, a welcome change took place. Science and technology touched the village life bringing about a spectacular success in crop production. The success of the Green Revolution transformed the rural life and outlook of the farmers. However, this achievement was not without some social cost. Large farmers having higher risk bearing capacity were benefited more and as such, in spite of the fact that the technology was scale neutral, the benefits were not distributed equitably amongst the entire farming community creating regional and social imbalances.

The past strategy of agriculture development generally implied increase in foodgrains and cash crop production only. There is progressively greater appreciation of the fact that agriculture means the optimum exploitation of soil-water-plant-animal-and man relationship. This has led to gradual realisation that agriculture has to be diversified and that new strategy of agriculture development should include simultaneous and parallel development of the livestock wealth of the country in which we are unique in having not only the largest population but also the widest genetic diversity.

Historically, the livestock development programmes with somewhat systematic adoption of science and technology in the country dates back to the post-war developmental drive. Greater emphasis was placed on livestock development with the start of the plan era. Among the notable development programmes which were launched during the plan periods are Key-village Scheme, Intensive Cattle Development Projects, Cross-Breeding of Cattle in Hilly and Heavy rainfall areas, intensive Sheep Development Projects, Sheep and Wool Extension Centres, Establishment of Bacon Factories and Piggeries Development Blocks, Intensive Poultry Development Projects and Co-ordinated Poultry Breeding Programmes. Most of these programmes were technically sound but the success was rather limited.

Critical examination of the livestock development programmes launched in the past will reveal that unintegrated approach and absence of some vital inputs and services marred their progress. The intensive cattle development project initiated to enhance milk production in the milk-shed areas of the established dairy plants is an example. The study of the programme evaluation organisation of the Planning Commission revealed that there were considerable delays in preparing the organisational structure required for execution of the programme. Timely supply of various inputs was not assured. Transfer of the project to the state sector resulted in curtailment of financial support from the Centre resulting to failure in providing inputs and services like fodder production, better breeding stock, marketing, financial support for extension and expertise of technical staff which were required in greater extent in the subsequent stages. Another example is cross-breeding in cattle which was taken up at many places in isolation without making any real efforts to improve the feeds and fodder production, health and husbandry services. Similar was the situation with sheep and pig development programmes. Whatever little was achieved in the laboratory and on the experimental farms, very little of that was transferred to the field. Significant improvement in poultry production could be possible only because of appropriate adoption of science and technology but most of it has been in the urban and peri-urban areas.

The demand for animal products has been estimated to be increasing at the rate of 4-5% annually during the last decade widening the gap between the demand and availability leading to price rise. To bridge this gap a comprehensive & integrated livestock development programme suited to our conditions and animal rearing practices is required.

Adoption of technologies of developed countries in our livestock development programmes, in my opinion, is questionable. Most of the improved livestock breeds in the developed countries have usually a hierarchial structure i.e. the stock comprises elite herds and multipliers and commercial animals. The breeding goals are mostly determined or directed by the market demands. Artificial insemination is followed as a rule in dairy cattle as a component of progeny testing.

The size of commercial operation is large. In case of poultry, it has become a part of multi-dimensional industrial establishment. A great sophistication has reached in poultry breeding where the nucleus stock is produced by breeding organisations without being involved in commercial production of egg and meat. The commercial birds are disseminated through a system of franchise hatcheries. Livestock farming is this industrialised and specialised operation in developed countries.

Contrarily, the situation in our country is different. Vast majority of the livestock assets are in the villages owned by the poorer section of the farming community. It is, thus, essential that the main emphasis in livestock development has to be given on improvement of their animals. This approach to the development efforts, however, should not preclude the participation of the relatively prosperous rural and periurban livestock owners in the production enhancement programmes. The strategy should further aim at improving the economic status of the producers and creating greater avenues of gainful employment to the rural families. The strategy of development must follow an integrated approach, meaning thereby, keeping provisions for inputs and supplies as well as remunerative marketing of the produce. The poverty of the livestock owners in the villages is one of the serious constraints in way of their effective participation in development programmes. This implies that institutional finance availability to the livestock owners has to be incorporated in the strategy. Lastly the strategy must ensure that the benefits of the development are equitably shared by all the participants.

To formulate any sound development strategy a strong statistical data base is essential. Unfortunately, sufficient attention has not been paid to develop a reliable data base on state, region and all India basis pertaining to livestock population and production trends and health problems, very little information is available on the comparative economics of different kinds of livestock farming. I would, therefore, take this opportunity to draw the attention of the livestock statisticians as well as all others concerned with livestock development to the need of building a strong database in this field. This would be of great help for conducting studies on various aspects of Animal Husbandry and for decision making and planning for development as well as adopting suitable livestock diseases and epidemics monitoring and forecasting strategies.

For effective implementation of any development programme availability of competent and qualified human resource is the first pre-requisite. In spite of the fact that the country has atleast one Veterinary College in all the states (excepting few central territories and north-eastern hill states), the availability of qualified veterinarians and higher specialised professionals is far below the recommended veterinarians/livestock ratio recommended by the FAO. Not only this, with the adoption of the land grant pattern of agriculture education in the country, the veterinary education had been lacking sharp focussing and required fiscal support. The unique experiment of the Government of Tamil Nadu to start Veterinary and Animal Science University followed by the Government of West Bengal is a positive step. Establishment of separate Veterinary and Animal Sciences University in the country will not only enable them to increase their intake capacities for providing more qualified veterinarians and higher specialists in the national pool of manpower but will also help them in sharp focussing the veterinary educational issues as well as provide reasonable autonomy in affecting appropriate functional and structural changes to suit their regional requirements.

The FAO/WHO expert consultation on veterinary education recommended that main role of the veterinarians will continue to be in the control and eradicating of animal diseases; in ensuring efficient animal production and safeguard humans from hazards due to animals and their products. The increasing importance of economic livestock production and public health activities necessitate the strengthening of the veterinary curriculum in these two fields. Moreover a dynamic education programme needs to assess the social, economic and client demands to be imbibed in its curriculum. With the changing scenario and open global competition, the qualified veterinarian is required to be competent for quick and correct diagnosis of animal diseases and their appropriate treatment, efficient in providing suitable breeding and husbandry practices, etc. With the opening of newer employment opportunities the veterinary students also need to be exposed to the entrepreneurship in livestock production. The Tamil Nadu Veterinary and Animal Sciences University deserves all compliments for having started new programmes in Animal Business Management, computer application etc, and their plan to start Veterinary Nursing and Animal Husbandry courses for school dropouts. The Joint FAO/APHCA/FAVA (1992) have identified more newer areas of growing potential for veterinary professionals which deserve considerations by various veterinary colleges.

The mandate of universities is to carry out problem solving research. Though sustained efforts have been made by the Veterinary and Animal Science researchers in understanding basic genetic architecture of our important breeds/species of livestock, their nutritional and management requirements, various livestock health problems; with the changing times and demands emphasis has to be made to tackle some frontier areas. The role of animal bio-technology in enhancing livestock production and efficient health care cannot be over emphasised. Intensive efforts need to be made to develop appropriate bio-technological techniques/tools for quick diagnosis of various animal diseases, developing efficient biological products for control of animal diseases and for faster genetics improvement for enhancing production. Bio-technology as a tool to make hitherto non-digestible vegetable matters efficiently utilisable by domestic animals need be explored. Similarly, as mentioned earlier, the country is endowed with a Vast genetic diversity of our domestic animals. Their critical evaluation and conservation need be given due priority.

Participation of client departments/organisations in framing academic curricula and finalising research agenda of a university is another important issue. Since the universities are producing graduates and specialists to be absorbed by the NARS, development departments and industry, their role in deciding the education and research activities of the university will develop an effective linkage and will be helpful in mutually assessing the needs and availability and strengths and weaknesses. There should be an effective participation of the state departments, industry etc, in this direction so that the client departments develop a confidence in the utility and relevance of the education and research programmes of the University.

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NEW ACADEMIC SESSION COMMENCES ON MONDAY, JUNE 30, 1997.

Mumbai
Date: 2.1.97

Dr. S.K. Bandyopadhyay
REGISTRAR

Conference on Functional Analysis

A four-day international conference on "Functional Analysis with Current Applications" was recently held at the Aligarh Muslim University (AMU). The speakers at the inaugural function said, "Contrary to the widely held view that mathematics is a science in ivory tower, it suggests a veritable methodology for technological and industrial development. Functional analysis, a fast developing branch of mathematics has found its way in every walk of life". They pointed out, "The top selling encyclopaedia encarta with the application of Functional Analysis has created 7,000 colour photographs in one CD-ROM".

Mr. Mehmoodur Rahman, Vice-Chancellor of AMU, who inaugurated the conference, said mathematics was not only a bedrock of all medical, social and earth sciences, but it also played a vital role in literature. "Poetry cannot be produced without meters which owe much to mathematics", he said.

Prof. G. Ewan from the United Kingdom felt that mathematical theories not only served to meet the technological needs of the present but carried the seeds of the future as well. "A field like functional analysis has more range of applications arising out of the pioneering developments of the founding fathers", he said. Giving an example in support of his contentions, Prof. Ewan said "when a bubble is made to burst, it emits a certain kind of light which is a puzzle to many mathematicians. But the problem is being tackled from the functional dimension and when the solution emerges, the cause of mathematics would certainly be further advanced", he pointed out.

Prof. S.A. Saxon of the United States was in full agreement with the observations of the eminent mathematician, Prof. Rockfeller, that "mathematics is the blood of any technological society. The fact that more and more people in different parts of the world are returning to the basics augurs well for the future of mathematics", he felt.

The Organising Secretary of the Conference, Prof. H.A. Siddiqui, said functional analysis was being treated as a language of science and technology. He pointed out that "the new application of mathematics must be reflected in our education system".

The conference urged the industry to take note of developments taking place in the field of mathematics and help promote research and development in emerging areas either directly or indirectly by promoting interactions between the theoretical practitioners and applied technologists.

The other participants included Prof. S. Chaghtai, Dean of Faculty of Science, Prof. M. Shafe, former Pro-Vice-Chancellor of Aligarh Muslim University, Taqdir Husain from Canada, Prof. D.N. Mishra, former Vice-Chancellor of Banaras Hindu University (BHU), Prof. M.A. Pathan, Prof. Martin Brokate from Germany, Prof. W. Zelasko from Poland and Prof. Z.M. Sanchez Rina and Prof. Oettali from Germany.

All-India Council for Vocational Training

Aiming to bring about qualitative improvements in the vocational training system, the Government is reportedly considering a proposal to establish an All-India Council for Vocational Training. The new apex body, when formed, will replace the existing National Council for Vocational Training. This was stated by the Union Labour Minister, Mr. M. Arunachalam, while addressing the 32nd meeting of the Council in New Delhi recently.

The Government proposes to set up the new council, which will be a statutory body, on the pattern of the All-India Council for Technical Education under the Union Ministry of Human Resource Development. With its well designed organisation structure, defined role and responsibilities, it is hoped that the AICVT will allow greater decentralisation of various activities including course design, curricula development and trade testing to enable the system to respond better to regional and local needs.

Mr. Arunachalam emphasised the need for developing suitable training programmes and vocational training system to facilitate easy adoption of new technologies by industries since unemployment problem mainly emanated from the mismatch between skill requirements of industries and skill profiles of job seekers.

With World Bank assistance, the Government is reported to have already initiated a revamp exercise in nearly 400 ITIs across the country. However, Mr. Arunachalam felt that present vocational training system was supply-oriented rather than demand-oriented.

"Besides having an up-to-date management information system for channelising the training programmes in an efficient and effective manner, there is a need to assess the skill requirements of industries both qualitatively and quantitatively", the Minister added.

University-Industry Linkage

The Governor of Haryana, Mr. Mahabir Prasad, called upon industrialists to liberally finance the universities in the state so that the right kind of human resource was produced for the industry. He stressed the need to gear up education to meet the imperatives of technical upgradation, demands of globalisation and international competitiveness. He was delivering the valedictory address on the conclusion of the two-day seminar organised by Guru Jambheshwar University on "University-industry linkage", in Hisar recently.

The funding by industrialists would help the universities in overcoming financial constraints and in turn they would be benefited by getting trained manpower, he said.

Mr. Prasad desired the university curriculum should be designed in such a way that the poorest among the poor should also be benefited. This would help in the eradication of poverty and unemployment.

The Vice-Chancellor, Prof. K.L. Johar, suggested that the name of university should be changed to Guru Jambheshwar University of Management and Technology.

Prof. Johar said a cell had been set up in the university for coordinating with the industry in Haryana. Another cell, called the environment cell, had also been created following the recommendations of the two-day seminar, he added.

Accreditation for More Institutions, Courses

Dr. G. J. V. Jagannadha Raju, Chairman of the National Board of Accreditation (NBA), said the NBA was set to launch on a massive scale the process of according accreditation to educational institutions. The ground work had been completed and necessary feedback got from the expert committees, he said.

Dr. Raju said that the NBA was now engaged in compiling the data on the institutions which had sought accreditation. A directory containing the details of the institutions, courses for which the accreditation was given, and the validity period of the accreditation would be brought out in March 1997. The directory would be widely publicised and handed over to the respective institutions, he said. The NBA Chairman said that so far about 70 colleges had sought accreditation for various courses, and about 100 programmes had been cleared by the Board. He anticipated a huge rush for accreditation once the directory was brought out.

He said that if a college, for instance, had sought accreditation for five courses, two experts from each section (one from the user organisation and one from the academicians) would be drafted to evaluate the courses offered, and the team thus formed would be headed by a chairman.

After the completion of the study, the team would apprise the management and the Principal of the respective colleges of the inherent strength and weaknesses of the programmes. Thus, transparency in the functioning of the committee would be ensured, and it was up to the colleges concerned to upgrade the facilities as required. Dr. Raju stressed that the job of the Board was not akin to sanctioning the opening of a college, but its focus would be on how to improve the quality of education.

The Board had framed elaborate guidelines and the accreditation would be given on a course-to-course basis and would not be meant for the entire institution as such. Accreditation would be given to various subjects such as engineering, pharmacy, architecture, applied arts and crafts, management and polytechnic courses.

All the Regional Engineering Colleges, University colleges, deemed universities, Government colleges, aided and un-aided colleges and polytechnics could apply for accreditation.

However, IITs and IIMs would not come under the purview of the NBA because these were providing the resource persons to the Board. The accreditation would be given in the form of grades : A, B, C and NA (not accredited), and re-evaluation would be done periodically, say for every five years or even before that. It was open to the institutions to upgrade the ranking in the future, and option was also given to the colleges to withdraw from the accreditation. He however said, getting accreditation had been made mandatory for any institution to get autonomous status. The sole aim of the NBA was to improve the quality of education and the ultimate objective was to enable all the colleges to give its own degrees as was being done in the U.S., Dr. Raju said.

Srinivasaiah College Golden Jubilee

Union Human Resource Development Minister, Mr. S.R. Bommai, underscored the need for private participation in the field of higher education. He was also in favour of allowing the private sector to establish their own universities in the country. He was inaugurating the golden jubilee celebrations of B.M. Srinivasaiah College of Engineering in Bangalore recently. He said that the government would ensure that such varsities strictly followed the reservation policy. In western countries, most of the universities were run by private parties and the same should be followed in India too, he said and added that the government would evolve a policy in this regard after thorough discussions. Mr. Bommai lamented that the literacy rate in Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh was about 40 per cent and nearly 80 per cent of the women were illiterate. India had not made much progress in the field of education despite its achievements in many other areas and the need of the hour was to give top priority to education, he said.

Speaking on the occasion, Mr. H.N. Nanje Gowda, MLA, urged the Centre to amend the Constitution to prevent judicial interference in the allotment of seats, fixing management quota and also the fee structure for professional courses. Manpower requirement surveys should be conducted to gauge the demand for engineering graduates, especially from the civil and electronics faculties, he said.

Refresher Course in Education

A 3-week Refresher Course in Education was recently organised by the Academic Staff College, Himachal Pradesh University, Shimla. Inaugurating the programme Prof. Lokesh Koul, Dean, Faculty of Education, said that India was a country with great diversities of culture, religion, caste, language and region and therefore system of education should be so designed to suit the needs of different groups. He reminded the teachers of their role as agents of social change in this crucial time. He warned that the callous attitude of the teachers towards the discharge of their duties may result in chaos in the society.

The deliberations in the seminar focused on the "thrust areas of research in education". Eminent educationists from different universities including IGNOU interacted with the participants.

Prof. C.L. Kundu, Vice-Chancellor, Himachal Pradesh University, in his valedictory address made a fervent appeal to the teacher educators to make the fruits of researches in education available to all disciplines in order to bring excellence in teaching learning process in all fields. He emphasised the need of evolving a theory of Indian education rather than adopting the existing theories which may not give a desired direction to our education.

Prof. Yoginder Verma, Director, Academic Staff College, Himachal Pradesh University, in his welcome address, pointed out that the Staff College had already organised 44 refresher courses and 31 orientation programmes. He said that in the year 1997-98 the staff college has decided to organise 20 courses under the ninth five year plan.

Participants from various states like Manipur, Maharashtra, Orissa, Karnataka, Andhra Pradesh, and Punjab attended the programme.

Prof. Iqbal Narain Passes Away

Eminent educationist, Prof. Iqbal Narain passed away on 17 December 1996. Associated with the Institute of Development Studies (IDS), Prof. Narain had held various prestigious posts including Member Secretary, ICSSR and Vice-Chancellor of the North-Eastern Hill University (NEHU), the Banaras Hindu University and the Rajasthan University.

After completing his studies at Jaipur, Udaipur and Agra, Prof. Narain started his teaching career in the Rajasthan University's Political Science Department. He was the Director of the South Asian Studies Centre in the Rajasthan University and Dean, Faculty of Social Sciences. He also served as the visiting Asian fellow in the Australian National University from 1975-76.

His academic contributions included studies on the Panchayati Raj system. He had been a member in the Sadiq Ali Committee of 1964 and the Giridhari Lal Vyas Committee later, constituted to study the Panchayati Raj.

Manipur Science Congress

The eighth session of Manipur Science Congress will be held at Manipur University, Imphal on 26-28 February, 1997. The objectives of the Congress are: (1) To advance and promote the cause of scientific research and education in the North Eastern Region of India; (2) To stimulate the mental activities in various branches of science and to make use of their applications for economic, social and industrial development of the state; and (3) To propagate the higher knowledge of science to the graduate students of various institutions in this region.

The focal theme of the Congress is Bio-diversity and Resource Management. The disciplines of science proposed to be covered at the Congress include : (i) *Life Science* — Agriculture, Horticulture, Medicine, Biochemistry, Plant Science, Home Science, Animal Science and Anthropology; (ii) *Physical Science* — Physics, Chemistry, Statistics, Mathematics, Computer Science, Electronics, Engineering; and (iii) *Environmental Science* — Geography, Forestry, Meteorology, Archaeology, Geology and Earth Science.

Further details may be obtained from : Prof. K.S. Bhamra, Organising Secretary, Eighth Manipur Science Congress, Mathematics Department, Manipur University, Imphal-795 003.

North Zone Inter-Varsity Youth Festival

A five-day North Zone Inter-Varsity Youth Festival was hosted by Punjabi University, Patiala. Sponsored by the Association of Indian Universities and Department of Youth Affairs and Sports, Govt. of India, the festival was inaugurated by Ms. Rajinder Kaur Bhattal, the then Deputy Chief Minister of Panjab (now Chief Minister). In her inaugural address she said that the youth festival would provide the youth an occasion to share and enjoy the peace, which had returned to Punjab after a long time. She said that the classroom teaching must be supplemented with the co-curricular activities like sports and cultural events.

Dr. Joginder Singh Puar, Vice Chancellor, in his welcome address said that during the festival the students would project the changing trends in the overall life of the society. He said that it was an occasion to celebrate and the student-artists would get the well deserved and rewarding exposure to present their talent.

Mr. Simpson David, Senior Cultural Officer of Association of Indian Universities, gave details of the various zonal youth festivals being held in different parts of the country. Dr. Ram Murti Goel, Pro-Vice-Chancellor, presented a vote of thanks.

The Youth Festival, 1996, PAT-FEST '96, exhibited a range of cultural panorama in the fields of music, dance, literature, theatre and fine arts in which over 700 artists representing 20 universities of North India participated.

In the debates competition, 14 universities participated and gave arguments for and against the invasion of western culture and whether the Indian culture would be able to withstand and survive the invasion or not. Most of the speakers said that Indian culture was strong enough to weather the invasion and survive all upheavals.

13 universities presented group songs which were patriotic and these concentrated on national integration. One act plays focused on a variety of economic, political and social problems. This was followed by competitions in Group Skits, Folk and Tribal Dances, and Group Mime. In these competitions over twenty different universities participated.

In the Quiz final, the competition was not only keenly contested, but was of a very high order. The competitive spirit was very much visible and the competitors were in upbeat mood.

In the Elocution competitions 13 universities participated. The subject of the Elocution "Future of the Country is safe in the hands of younger generation" was kept in focus but the speakers also referred to the other relevant issues concerning education policy and contents of syllabi. It was the unanimous view that overhauling was very much needed and the delay in doing so was working against the interests of the country.

Various competitions like Collage, Cartooning, On the Spot Painting, Poster Making, Rangoli, Clay Modelling, were also organised. An interesting feature was the subject of scams which was given as the topic for the contest in cartooning. The painters were asked to paint an angle of the exterior of Guru Tegh Bahadur Hall.

Shri Brahm Mohindra, Industries Minister, Panjab, was the Chief Guest at the valedictory function. Speaking on the occasion, he said that youth festival played a very significant role in providing an opportunity to budding student-artists in displaying their talent and art. Also these festivals helped the students in releasing tension through the creative arts and ridding them of prejudices.

RESULTS

1. MUSIC

(A) Classical Vocal
Dayalbagh Educational Institute, Agra
Punjabi University, Patiala
GNDU, Amritsar

(B) Classical Inst. Percussion
Dayalbagh Educational Institute, Agra
Punjabi University, Patiala
Jammu University, Jammu
Himachal Pradesh University, Shimla

(C) Classical Inst. Non-Percussion
GNDU, Amritsar
Dayalbagh Educational Institute, Agra
H.P. University, Shimla
Thapar Institute, Patiala

(D) Light Vocal
Punjabi University, Patiala
Dayalbagh Educational Institute, Agra
GNDU, Amritsar
Kashmir University, Srinagar

(E) Western Vocal (Solo)
Lucknow University, Lucknow
Kurukshetra University, Kurukshetra
Punjabi University, Patiala
Dayalbagh Educational Institute, Agra

(F) Group Song (Indian)
Dayalbagh Educational Institute, Agra
Jammu University, Jammu
MD University, Rohtak

(G) Group Song (Western)
Dayalbagh Educational Institute, Agra
GNDU, Amritsar
Kurukshetra University, Kurukshetra

2. DANCE

(A) Folk Dance
Kurukshetra University, Kurukshetra
Punjabi University, Patiala
PAU, Ludhiana
Haryana Agri. University, Hisar

(B) Classical
Lucknow University, Lucknow
Punjabi University, Patiala
MD University, Rohtak

3. LITERARY EVENT

(A) Quiz
GNDU, Amritsar
PAU, Ludhiana
Panjab University, Chandigarh
Kumaon University, Nainital

(B) Debate
Punjabi University, Patiala
Punjab Agri. University, Ludhiana
Panjab University, Chandigarh

(C) Elocution
Punjabi University, Patiala
Panjab University, Chandigarh
Jammu University, Jammu
University of Kashmir, Srinagar

4. THEATRE

(A) One Act Play
Punjabi University, Patiala
H.P. University, Shimla
GNDU, Amritsar

(B) Skit
GNDU, Amritsar
Punjabi University, Patiala
Ch. Charan Singh Haryana Agri. University, Hisar

(C) Mime
GNDU, Amritsar
Jamia Millia University, New Delhi
PAU, Ludhiana
Jammu University, Jammu

5. FINE ARTS

(A) On the Spot Painting
Lucknow University, Lucknow
Punjabi University, Patiala
GNDU, Amritsar
Dayalbagh Educational Institute, Agra

(B) Collage
Punjab Agri. University, Ludhiana
Punjabi University, Patiala
Ch. Charan Singh Haryana Agri. University, Hisar
Jammu University, Jammu

(C) Poster Making
Dayalbagh Educational Institute, Agra
Rohilkhand University, Bareilly
University of Kashmir, Srinagar
Punjabi University, Patiala

(D) Clay Modelling
Punjabi University, Patiala
Lucknow University, Lucknow
Panjab University, Chandigarh
University of Kashmir, Srinagar

(E) Cartooning
Jammu University, Jammu
Punjabi University, Patiala
University of Kashmir, Srinagar
Panjab University, Chandigarh

(F) Rangoli
Punjabi University, Patiala
Kamaon University, Nanital
GNDU, Amritsar
Lucknow University, Lucknow

CHAMPION

Music - Dayalbagh Educational Institute, Agra

Dance - Punjabi University, Patiala

Literary - Punjabi University, Patiala

Theatre - Guru Nanak Dev University, Amritsar

Fine Arts - Punjabi University, Patiala

OVERALL RUNNERS UP
Dayalbagh Educational Institute, Agra

OVERALL CHAMPION
Punjabi University, Patiala

UNESCO Award for Anil Bordia

Mr. Anil Bordia, Former Education Secretary, Govt. of India, has been selected for a UNESCO award "Fellow of ACEID" in recognition of his excellence and contribution in the field of education. Mr. Bordia is among the six outstanding educators from various countries in the Asia-Pacific region selected for the award which is instituted by UNESCO's Asia-Pacific Centre of Educational Innovation for Development (ACEID).

Distinguished Engineering Alumni Award

Dr. Pasala Dayaratnam, Vice-Chancellor, Jawaharlal Nehru Technological University has been awarded the Distinguished Engineering Alumni Award (DEAA) by the University of Colorado at Boulder, USA, for his contributions to Education.

The DEAA program was initiated in 1966 to honour truly distinguished engineers. It is the College's most prestigious award and is conferred upon the University of Colorado's most outstanding engineering graduates or those non-alumni who deserve special recognition by the College of Engineering.

Dr. Dayaratnam will receive the award at the Distinguished Engineering Alumni Awards banquet on April 25, 1997.

AIU NEWS

Prof. Nigam Takes Over

Prof. N.C. Nigam, Vice Chancellor, University of Roorkee, has taken over as the President of the Association of Indian Universities on January 1, 1997.

Born on 1 January 1937, Prof. Navin C Nigam did his B.Sc. from the University of Allahabad. He obtained his BE degree in Civil Engineering from the University of Roorkee in 1958, Master's degree in Engineering Mechanics from Purdue University in 1964 and PhD from the California Institute of Technology in 1967.

An eminent academic, Prof. Nigam served as a member of the faculty of the department of Aeronautical Engineering at the Indian Institute of Technology, Kanpur during 1969-82 — Head of the department 1973-74, Dean of Research and Development 1974-76, and Deputy Director 1978-80. He was Visiting Associate at the California Institute of Technology in 1981, and Visiting Professor at the University of Waterloo in 1982 and at the Indian Institute of Technology, Madras in 1988.

An astute administrator, prior to his appointment as the Vice Chancellor of the University of Roorkee in October 1996, Prof. Nigam served with distinction as the Director, Thapar Institute of Engineering & Technology 1982-89 and the Founding Director, Thapar Corporate Research and Development Centre; Director, Indian Institute of Technology, Delhi 1989-94 and Vice Chancellor, University of Goa 1995-96.

A distinguished scholar, Prof. Nigam has published *Introduction to Random Vibrations* (1983) and *Applications of Random Vibrations* (1994). He won the distinguished alumni award of the California Institute of Technology and Wisitex Award 1991 for his contributions towards application of science and technology to national development.

An accomplished professional, Prof. Nigam has been consultant to Tata Consulting Engineers and other companies and organisations, Chairman of Aerospace Engineering Division Board, Institution of Engineers (India) 1983-89 and the National Committee of International Union of Theoretical and Applied Mathematics (IUTAM) 1985-88, and Member of the Governing Body of the Council of Scientific and Industrial Research (CSIR) 1985-88. Currently he is the Chairman, Research Council, Central Building Research Institute (CBRI), Roorkee and member of the Technology *Information Forecasting* and Assessment Committee (TIFAC), and the Apex Committee for Oman-India Pipeline, Govt. of India.

Prof. Nigam has been a very active member of a number of professional associations. He was Secretary of the Indian National Academy of Engineering during 1991-95 and is currently its Fellow and Vice-President. He is also a Fellow of the Institution of Engineers (India), Aeronautical Society of India, Indian Society of Earthquake Technology, and the Indian Society for Technical Education. He is also a member of the Council of the Association of Commonwealth Universities, London.

Prof. Nigam brings to his new office a wealth of wide and varied experience. *University News* heartily welcomes him and wishes him a very fruitful and gratifying tenure.

News from Agricultural Universities

Symposium on Use of Potassium

A symposium on the Use of Potassium in Haryana Agriculture concluded recently at Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), Hisar. The participants expressed concern over the inadequate and imbalanced use of fertilizers by the farmers in intensive agriculture as a consequence of which nutrients depletion and imbalance in the soil system had been increasing at a rapid rate posing threat to sustainability in agriculture production.

They observed that in Haryana though there was phenomenal increase in fertilizer consumption from 41 kg per hectare in 1966-67 to 128 kg per hectare in 1994-95, yet it was inadequate and imbalanced for intensive agriculture. They said that against the ideal nitrogen, phosphorus and potassium ratio of 4:2:1 their consumption ratio was 161: 43.3:1, which besides uneconomical was detrimental to soil productivity.

The scientists emphasised the need to popularise the use of potassic fertilizers in Haryana as its status was depleting at a very fast rate of 200-400 kg per hectare per year. They reported that spray of 1.0 per cent potassium had been found to hasten maturity of wheat by 15-20 days and to improve the quality of grapes, guava, mango and citrus fruits. However, Dr. V.P. Singh, Director of Research, stressed to further experiment this observation and demonstrate for the benefit of the farmers.

Dr. G. Dev, Director, Potash and Phosphate Institute of Canada-India Programme presented a comprehensive account of the importance of potassium in various crops, while Dr. M.S. Oswal, Head, Department of Soil Science, CCSHAU revealed that soil potassium map of Haryana had been prepared by his department.

News from UGC

Countrywide Classroom Programme

Between 16th and 23rd January, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission
6.00 a.m. to 7.00 a.m

16.1.97

"Silver Magic-I"

"Teacher Education in India"

"Plants in your House"

18.1.97

"Eyes in the Sky : Remote Sensing - III"

"Jute-Enzymes in Jute Industry - V"

"India, An Idea"

19.1.97

"Theatre Architecture -II Modern Theatre"

"Modern Painting and Salvador Dali"

"The Fountain Head of Freedom Fighters of Andhra Pradesh : Garimella"

21.1.97

"Conservation and non-conservation Fields"

"Iron in the Cells"

"Fragments from the Past : National Archives-II"

23.1.97

"Silver Magic-II"

"No, Thanks!"

"Channels of Health Communication"

IInd Transmission
1.00 p.m. to 2.00 p.m.

16.1.97

"Searching the Frontiers : Alternate Building Material"

"Reflection of an Author"

17.1.97

"Special Care for Special Children"

"Metallurgy in Ancient India"

"Algebraic Structure-III : Groups"

18.1.97

"History of Indian Painting-XII : The New Indian Paintings"

"Family Series : Two Sons-II (Korean)"

19.1.97

No Telecast

20.1.97

"Question Time"

"Classical Mechanics - VII : Galilean Invariance"

"Future of Educational Research"

21.1.97

"Gravimetric Estimation of Barium"

"Pronouncing English"

"Medicinal Drugs : Is the Medication more Lethal"

22.1.97

"Indigo Dyed Fabrics"

"Links with our Past"

"Integrated Pest Management"

23.1.97

"Introduction to Social Anthropology - I"

"Geo-Engineering : Studies in Coal Mines"

"Values in Education"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

17.1.97

"योग द्वारा स्वास्थ्य लाभ - III"

20.1.97

"राग संगीत - I"

22.1.97

"संगीत गणित - III"

"पाठन : एक अनमोल कौशल"

News from Abroad

Admission to French Universities

Indian nationals seeking admission into French universities for the academic year 1997-98 *at the undergraduate level* (first cycle), in Arts, Sciences, Medicine and Law, must undergo pre-inscription formalities (provisional enrolment).

Candidates seeking admission into the first cycle will have to submit the completed forms by 30th January and undergo a French language test on Thursday 20th February 1997.

For admission into the first cycle of a French university, it is preferable for the candidate to have a Bachelor's Degree. However a candidate with "10+2" may appear for the entrance examination. The university to which he/she applies will decide upon the equivalence to be granted. Any other examination which makes a candidate eligible for university studies in his/her own country is also accepted for the purpose of enrolment.

Those interested in enrolling themselves for Engineering are required to write directly to the French institution of their choice.

Candidates have to meet their own expenses (tuition fee, living expenses, travel, etc.) in foreign currency (roughly 40,000 French Francs per year).

Pre-inscription forms, available upto 15th January 1997, and other details may be obtained from the Director, C.E.D.U.S.T., French Centre for Documentation on Universities, Science and Technology, Embassy of France, 2, Aurangzeb Road, New Delhi-110 011.

TATA INSTITUTE OF SOCIAL SCIENCES
(A Deemed University)
Post Box No. 8313, Deonar, Mumbai - 400088

ANNOUNCES ADMISSION TO THE FOLLOWING ACADEMIC PROGRAMMES 1997-98

1. **M.A. in SOCIAL WORK** (Full-time 2 years) with specialisations in (i) Criminology and Correctional Administration (CCA), (ii) Family and Child Welfare (FCW), (iii) Medical and Psychiatric Social Work (MPSW), and (iv) Urban and Rural Community Development (URCD)

Eligibility: A First Bachelor's Degree in (i) Arts / Commerce / Science / Engineering with a minimum aggregate marks of 45%. (35% for SC/ST); (ii) Law / Medicine / Nursing with a minimum aggregate marks of 50% (40% for SC/ST), or the equivalent grade.

2. **M.A. in PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS** (Full-time 2 years).

Eligibility: A First Bachelor's Degree in (i) Arts / Commerce / Medicine / Law / Nursing with a minimum aggregate marks of 50% (40% for SC/ST) or the equivalent grade; (ii) Science / Engineering with a minimum aggregate marks of 55% (45% for SC/ST).

3. **CERTIFICATE IN SOCIAL WELFARE ADMINISTRATION** (Full-time One Semester; June 30, 1997 to October 29, 1997).

Eligibility: A Bachelor's Degree in any discipline with a minimum of 3 years experience in the field of social welfare / development programmes.

Last date for receipt of completed application form for programme Nos.1, 2 and 3 is 28.2.1997, 31.1.1997 and 23.5.1997 respectively:

Admission: Through Entrance Test followed by Group Discussion and Interview. **The test will be held at the Institute only, in June 1997** For details see advertisement appeared in the Times of India (Mumbai) on 2nd December 1996 and the Employment News dated 7.12.96 or write to Assistant Registrar (Academic) of the Institute.

Mumbai
Date: 7.1.97

Dr. S.K. Bandyopadhyay
REGISTRAR

BOOK REVIEW

Glory of Indian Libraries during Muslim Rule

Anjana Chattopadhyay*

Shaikh Allauddin and R.K. Rout. Libraries and librarianship during Muslim Rule in India. New Delhi, Reliance Publishing House, 1996. Pp. viii+275. Rs. 375, $77.

The book under review studies the origin, growth and development of books and libraries in India during the medieval period which coeval with Islamic rule in India. It is a graphic record of how the knowledge and wisdom of the scholars had been acquired, processed and preserved for the future generations of researchers and scholars interested in this period.

In the introductory chapter the book highlights the fact that in the Mughal period the formal education through books was the privilege of a select few belonging to the upper classes of the society like the Brahamins, Kshatriyas and the royal nobility. The teaching and learning of these select few took place in the monastic organizations, palaces of kings and houses of the nobility. The books and libraries of these people were usually meant for and used by a few scholars only.

There is a Sanskrit saying, *Kosavan Achryah* which means that to have a library is to be an educator. This shows how much prestige, privilege and responsibility was attached to a person having a library. Reading and copying of manuscripts were considered religious work of great merit. The manuscript writers were renowned scholars and they were recruited by emperors, kings and feudal lords. They were honoured and respected by the nobility. They also acted as the custodians of manuscripts and keepers of the court libraries. Consequently rare books of arts, sciences and philosophy adorned the court libraries.

Next three chapters are devoted to the libraries of Delhi Sultanate, Mughal dynasty and the Deccani kingdoms.

Dynasties such as Ghulaman, Khiljee, Tughlaque, Lodhi, etc were great patrons of learning. King Jalal-ud-din Khiljee acquired and preserved many great books for his Imperial Library and appointed a great Indian poet Amir Khusru as the Librarian of his Imperial Library. Humayun himself was a great scholar and scientist. He was very fond of books and new scientific instruments. He desired his collections of scientific instruments to be used for the welfare and prosperity of his people. He had a rare collection of books on mathematics, astrology, religion and philosophy. He fell down from the stairs of his library at Purana Quila of Delhi, and lost his life. This shows his love and devotion to books and libraries.

After the fall of Mughal Emperors in India Britishers' took no interest to maintain these libraries, instead they transferred many precious documents to Europe. Today many European libraries have valuable books and hand written manuscripts worth crores of rupees from India.

The fifth chapter traces the history of few special libraries. The rarest of the rare collections of these libraries also find a detailed description in this chapter. These rare books need to be preserved properly for the posterity.

The sixth chapter is on the regional libraries. Libraries of Kashmir, Sayed Hamdani, and of great Madrasas, etc are described in detail in this chapter. The li-

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

CORRIGENDUM

In addition to the qualifications listed for the post of Professor in Programme Evaluation under para (i) in the advertisement in *University News* dated 09 Dec. 1996 the following qualification will also be considered :

M.A. in Education and Economics with Ph.D. in any discipline where statistical tools/methods are extensively used.

Other qualifications listed in the said advertisement for the post of Professor of Programme Evaluation remain unchanged. Last date for issue and last date of receipt of application for this post have been extended upto 15.01.1997 and 22.01.1997 respectively.

**Assistant Librarian, Jawaharlal Nehru University Library, New Delhi-110 067.*

braries like Khuda Bakhsh Oriental Library, the Raza Library (Rampur) and the Asfiyah Library are the brilliant examples of literary and artistic puruits of the Indian Muslims of that time. These libraries are known throughout the world for possessing richest and rarest collections of Oriental literature. At the end of this chapter a list of the selected manuscripts has been provided. This list will be of immense use to the scholars working in this field.

Chapter seven provides insight into how the library development in the medieval period received encouragement due to the availability of paper in the Islamic world. More extensive use of paper naturally aided production of books and building up of libraries of these regions. The book has given detailed account of Muslim India, when book binding was recognised as an art. Muslim binders excelled in the art of book binding by introducing various new methods of decoration of covers with ornamental gold prints.

The format of each chapter is uniform, first it gives the historical account of libraries during that period, followed by examples of prominent libraries of that region. In the text, the authors do not merely explain the details of libraries but also try to describe how these libraries influenced the socio-cultural life of people.

The writing style of the book is lucid and easy to read, often primary sources are mentioned. The bibliography is extensive and the Index is detailed and helpful. Black and white photographs are well described. This book will provide an additional reading to the earlier publications, available in this field like — "Some leading Muslim libraries (S M Imamuddin), History of libraries : Ancient and Medieval (D N Marshall), Library and librarian-ship of ancient and medieval India (B K Datta), etc.

The authors have put in a lot of effort and dedicated work in bringing out the volume. It is hoped it will be of immense help to scholars, students, and all those concerned with and interested in the Mughal period.

UNIVERSITY OF PUNE

State Eligibility Test (SET)

To be eligible for appointment as Lecturer in faculties of Arts, Social Sciences, Commerce, Science, Law and Education in Universities and Affiliated Colleges in Maharashtra, it is essential to clear NET of UGC or SET, of Govt. of Maharashtra. University of Pune, as State Agency, would conduct FIFTH SET at S.N.D.T. (South Mumbai), Bombay (Kalina, North Mumbai), Pune, Kolhapur, Nasik, Jalgaon, Aurangabad, Nanded, Amravati, Nagpur, Solapur, Chandrapur and Goa (Talegao Plateau) Centres, **on Sunday, 30th March 1997** in.

Marathi, Hindi, English, History, Economics, Philosophy, Psychology, Sociology, Politics, International Relations including Defence and Strategic Studies, Home Science, Library and Information Science, Journalism and Mass Communication, Social Work, Mathematics, Statistics, Physics, Chemistry, Botany, Zoology, Geology, Geography, Computer Science, Microbiology, Electronics, Science, Bio-chemistry, Commerce, Law, Education and Phsical Education.

Hereafter, please note that Examinations in Philosophy, International Relations including Defence & Strategic Studies, Home Science, Journalism & Mass Communication, Geology & Law will be held once in a year.

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RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

BIOLOGICAL SCIENCES

Bio-Physics

1. Vasishta, Ashima. **Role of zinc in the metabolic effects of ethanol in rat liver and intestine.** Panjab. Dr D K Dhawan, Department of Biophysics and Dr Akhtar Mahmood, Department of Biochemistry, Panjab University, Chandigarh.

Bio-Technology

1. Radhakrishnan, A. **Isolation, characterisation and Efficiency of indigenous Cellulolytic Bacteria under varying conditions with reference to cellulose activity.** Kerala. Dr V Thankamani, Reader and Head, Department of Biotechnology, University of Kerala, Thiruvananthapuram.

2. Shaji, C. **Degradation and decolourisation of alkaline lignin and distillery effluent by mold and bacteria.** Kerala. Dr V Thankamani, Reader and Head, Department of Biotechnology, University of Kerala, Thiruvananthapuram.

Botany

1. Asha Devi, A. **Physiological and biochemical studies on the diosgenin production by tissue cultures of Yams (Dioscorea SPP).** Kerala. Dr G Mohanadasan Nair, Professor, Department of Botany, University of Kerala, Thiruvananthapuram.

2. Depa Hansrajani. **Studies on potential use of aquatic macrophytes and phytowastes in removal of metals from waste water.** Vikram. Dr D M Kumawat, Lecturer, School of Studies in Botany, Vikram University, Ujjain.

3. Jacobkutty, M I. **Karyomorphological studies in allium sativumlinn.** Kerala. Dr K V Bhavanandan, Professor, Department of Botany, University of Kerala, Kariavattom.

4. Katiyar, Vinita. **Study of selected tree crop species in response to So_2-No_2 effects at different growth stages.** Vikram. Dr P S Dubey, Prof and Head, School of Studies in Botany, Vikram University, Ujjain.

5. Koshy, Reena. **Consanguinity studies in inbreeding castes and communities.** Kerala. Dr P Gopalakrishna Pillai, Department of Botany, University of Kerala, Kariavattom.

6. Shakeela, N. **Consanguinity studies among the Muslims and Nayars.** Kerala. Dr P Gopalakrishna Pillai, Department of Botany, University of Kerala, Thiruvananthapuram.

7. Shajikumar, D. **Tissue culture studies on trees.** Kerala. Dr Ashalatha S Nair, Lecturer, Department of Botany, University of Kerala, Kariavattom.

8. Thomas, Rajiv M. **Phy-to-toxicity and interactivity effects of Cd, Zn, and Mn. on *cucumis sativa*. and their detoxification by triazoles.** Kerala. Dr V P Singh, School of Studies in Botany, Vikram University, Ujjain.

9. Vadde, Vasanta Rani. **Role of *Phanerochaete chrysosporium* and other white rot fungi in treatment of kraft bleach effluents.** Vikram. Dr O P Mall, Prof, School of Studies in Botany, Vikram University, Ujjain.

Zoology

1. B, Vinod Kumar. **Cytogenetic studies in thyroid neoplasms.** Kerala. Dr Ravindran Ankathil, Asst Professor, Regional Cancer Centre, Thiruvananthapuram.

2. Mahajan, Monika. **Studies on the involvement of zinc in obesity, diabetes and hypercholesterolemia in humans.** Panjab. Dr S K Taneja, Department of Zoology, Panjab University, Chandigarh.

3. Leena, S. **Effect of an indigenous hypoglycemic drug on diabetic rats.** Kerala. Dr Oommen V Oommen, Prof and Head, Department of Zoology, University of Kerala, Kariavattom.

4. Sreekumar, P G. **Mammalian diversity in Neyyar, Eravikulam and Silent Valley.** Kerala. Dr M Balakrishnan, Prof, Department of Zoology, University of Kerala, Kariavattom.

5. Sindhu, S. **Mechanism of juvenile hormone biosynthesis in certain pest insects.** Kerala. Dr D Muraleedharan, Prof, Department of Zoology, University of Kerala, Kariavattom.

6. Varghese, Sheelu **Effect of thyroid hormones on the metabolism of phospholipids in a fish *Anabas Testudineus*** Kerala. Dr Oommen V Oommen, Prof and Head, Department of Zoology, University of Kerala, Kariavattom.

EARTH SYSTEM SCIENCES

Geology

1. Kapoor, Rakesh. **A contribution to the micropalaeontology, stratigraphy and sedimentological studies of Neogene strata of Dharamsala Region, Himachal Pradesh, India.** Panjab. Dr R Y Singh and Dr A D Ahluwalia, Department of Geology, Panjab University, Chandigarh.

2. Mawale, Yadao Kumar. **Train studies, emplacement kinematics & time relations between deformation episodes & metamorphic events : Untala Granite, East Rajasthan.** HS Gour. Dr P P Roddy, Department of Applied Geology, Dr Harisingh Gour Vishwavidyala, Sagar.

3. Saritha, R. **Pressure temperature fluid conditions and metamorphic history of the Nagercoil granite massif, Southern India.** Kerala. Dr M Santhosh, Scientist, Centre for Earth Science Studies, Trivandrum.

ENGINEERING SCIENCES

Engineering

1. Saheeda, P A. **Simulation of synchronous movements**

using neural networks. Kerala. Dr M Sasikumar, Prof and Head, Department of Electronics and Communication, College of Engineering, Thiruvananthapuram.

MATHEMATICAL SCIENCES

Geometry

1. Kannan, B. **Computational Geometry and its applications.** Kerala. Dr Manoj Changat, Lecturer, Department of Futures Studies, University of Kerala, Thiruvananthapuram.

PHYSICAL SCIENCES

Chemistry

1. Binder Singh. **New assay methods for organosulphur compounds and their application in drug analysis.** HP. Dr B C Verma, Department of Chemistry, Himachal Pradesh University, Shimla.

2. Chandrika Devi, T. **Transition metal complexes of some benzimidazole derivates.** Kerala. Dr R Krishnan, Lecturer, M G College, Trivandrum and Dr A Salahudeen Kunj, Reader, University College, Trivandrum.

3. Chauhan, Manoj Kumar. **A study of thermodynamic and transport properties of some common tetra-alkyl and multivalent electrolytes in binary aqueous mixtures of glycols.** HP. Dr M L Parmar, Department of Chemistry, Himachal Pradesh University, Shimla.

4. Gautam, Rajneesh. **Solvation studies of some solutes in binary solvent systems.** HP. Dr V K Syal, Department of Chemistry, Himachal Pradesh University, Shimla.

5. Nagesh Kumar. HP. Dr Dhani Ram Sharma, Department of Physics, Himachal Pradesh University, Shimla.

6. Pal, Anil Kumar. **Synthesis, characterization and reactivity of aryl and diaryl fluoro acetophenones.** Panjab. Dr Tejvir Singh and Dr R D Anand, Department or Chemistry, Panjab University, Chandigarh.

7. Sharma, Akash Deep. **Studies of thermodynamic and transport properties of some solution involving DMF-Methanol solvent systems.** HP. Dr Shashi Kant Sharma, Department of Chemistry, Himachal Pradesh University, Shimla.

8. Siddiqui, Imrana. **Electrochemical studies on some organic compounds.** HS Gour. Dr K S Pitre, Department of Chemistry, Dr Harisingh Gour Vishwavidyalaya, Sagar.

9. Sud, Kuldip Chand. **Radiotracer studies on transformation and availability of phosphorus and sulphur in solids of Shimla and Lahaul area, Himachal Pradesh and their assimilation by potato plant in Shimla soils.** HP. Dr B C Verma, Department of Chemistry, Himachal Pradesh University, Shimla.

10. Varghese, Sumol. **Kinetics and thermodynamics of adsorption of some toxic substances on modified solid surfaces from solution.** Kerala. Dr T S Anirudhan, Senior Lecturer, Department of Chemistry, University of Kerala, Thiruvananthapuram.

Physics

1. Batham, Parshant Kumar. **Studies on the design of electron cyclotron resonance plasma sources and its interaction with the materials.** Panjab. Dr R P Bajpai, Additional Director, MID, CSID, Sector 30, Chandigarh and Dr S C Bedi, Department of Physics, Panjab University, Chandigarh.

2. Naresh Kumar. **Rb-S geochronology of some gneissic and granitic rocks and sr isotope study of water samples from Rohtang-Manali Jhuni-Bandal area of Kulu District, Himachal Himalaya, India.** Panjab. Dr S K Kwatra and Dr V P Singh, Department of Physics, Panjab University, Chandigarh.

3. Shahi, Jangvir Singh. **X-ray photon scattering cross section measurements and application in elemental analysis using EDXRF technique.** Panjab. Dr Nirmal Singh and Dr Devinder Mehta, Department of Physics & Astrophysics, Delhi University, New Delhi.

4. Thakur, Pardeep. **Hyperfine field and nuclear electromagnetic moment measurements using perturbed angular correlation techniques.** Panjab. Dr A K Bhati and Dr S C Bedi, Department of Physics, Panjab University, Chandigarh.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during November 1996

EDUCATIONAL PHILOSOPHY

Krishnaraj, R. Religion and education. **Progress of Edn** 71(4), 1996, 77-81.

Pylee, M V. Preparing colleges for the twenty first century. **New Frontiers in Edn** 26(3), 1996, 228-35.

ECONOMICS OF EDUCATION

Stewart, Kenneth D and others. The development of salary goal modeling : From regression analysis to a value based prescriptive approach. **J of Hr Edn** 67(5), 1996, 555-76.

SCIENCE EDUCATION

Pollack, Robert. Avoiding "perverted science" : The dangers of willful ignorance. **Change** 28(3), 1996, 56-9.

DISTANCE EDUCATION

Edwards, Richard. From a distance? : Globalisation, space-time compression and distance education. **Open Learning** 9(3), 1994, 9-17.

Shetty, N R. International spectrum on continuing engineering education. **Indian J of Tech Edn** 17(1), 1994, 23-7.

EDUCATIONAL PSYCHOLOGY

Corbu, Charalambie. Culture and sustainable human development. **Hr Edn in Europe** 20(4), 1996, 168-9.

Hurtado, Sylvia. How diversity affects teaching and learning. **Ednl Record** 77(4), 1996, 27-9.

Parks, Laurent A and others. Lives of commitment : Higher education in the life of the new commons. **Change** 28(3), 1996, 10-5.

Renaud, Robert D and Murry, Harry G. Aging, personality and teaching effectiveness in academic psychologists. **Research in Hr Edn** 37(3), 1996, 323-40.

Watkins, Karen E. Workplace learning : Changing times, changing practices. **New Directions for Adult and Continuing Edn** 68, 1995, 3-16.

Weinstein, Claire Ellen. Learning how to learn : An essential skill for the 21st century. **Ednl Record** 77(4), 1996, 49-52.

EDUCATIONAL SOCIOLOGY

Pierce, David R. Community colleges as community builders. **Ednl Record** 77(4), 1996, 30-1.

EDUCATIONAL POLICY & PLANNING

McDaniel, Olaf C. In search of the future role of government in higher education policies : Report of a multi-criteria analysis. **Hr Edn in Europe** 20(3), 1996, 59-74.

UNESCO POLICY papers for change and development in higher education. **New Frontiers in Edn** 26(3), 1996, 288-334.

EDUCATIONAL ADMINISTRATION

Bunt-Kokhuis, S G M van de. University teachers and higher education international networks. **Hr Edn in Europe** 20(3), 1995, 75-93.

Dill, David D and others. Accreditation & academic quality assurance : Can we get there from here? **Change** 28(5), 1996, 17-24.

Glidden, Robert. Accreditation at a crossroads. **Ednl Record** 77(4), 1996, 22-4.

INDUSTRY INSTITUTION interaction : The Tata Steel experience (Editorial). **J of Engg Edn** 9(4), 1996, 56-8.

Kumaraswami Pillai, K. Globalisation in higher education : A perspective. **New Frontiers in Edn** 26(3), 1996, 270-2.

Madhavan, M. TQM in educational institutions. **Indian J of Tech Edn** 19(2), 1996, 29-32.

Natarajan, R. Resource mobilisation and management in technical education. **Indian J of Tech Edn** 19(2), 1996, 17-21.

Ostar, Allan W. Institutional conflict. **New Directions for Hr Edn** 92, 1995, 59-62.

Sporn, Barbara. Managing university culture : An analysis of the relationship between institutional culture and management approaches. **Hr Edn** 32(1), 1996, 41-60.

Thornhill, Adrian and others. Role of employee communication in achieving commitment and quality in higher education. **Quality Assurance in Edn** 4(1), 1996, 12-20.

CURRICULUM

Ediger, Marlow. The physical education curriculum. **Progress of Edn** 71(4), 1996, 82-4.

Joseph, K S. Value loaded curriculum : Need of the hour. **New Frontiers in Edn** 26(3), 1996, 249-58.

Kratochvil, Petr. The humanities and the social sciences in transition. **Hr Edn in Europe** 20(4), 1995, 161-2.

TEACHERS & TEACHING

Bagalkot, L H. Interdisciplinarity in teacher education with reference to higher education. **J of Edn & Social Change** 8(2-3), 1994, 56-66.

Herdia, Rudolf C. Teaching as a subversive activity : Pedagogies for change. **New Frontiers in Edn** 26(3), 1996, 236-48.

EDUCATIONAL RESEARCH

Berg, Carin. Academy research institutes and universities. **Hr Edn in Europe** 20(4), 1995, 157-60.

Despic, A. Research and the young generation. **Hr Edn in Europe** 20(4), 1995, 230-2.

Kember, David and McKey, Jan. Action research into the quality of student learning : A paradigm for faculty development. **J of Hr Edn** 67(5), 1996, 528-54.

Noser, Thomas C and others. Research productivity and perceived teaching effectiveness : A survey of economics faculty **Research in Hr Edn** 37(3), 1996, 299-321.

Webster, David S and Skinner, Tad. Rating Ph D programs : What the NRC Report says ... and doesn't say. **Change** 28(3), 1996, 22-44.

EDUCATIONAL TECHNOLOGY

Couper, Ross and Kaye, John. Using computer generated images and text for the whole of an undergraduate course. **British J of Ednl Tech** 27(2), 1996, 116-22.

Gates, Bill. Linked up for learning : Using technology on campus. **Ednl Record** 77(4), 1996, 34-41.

MacKinnon, Allan and others. An inventory of pedagogical considerations for interactive television. **J of Distance Edn** 10(1), 1995, 75-94.

Plowman, Lydia. Narrative, Linearity and interactivity : Making sense of interactive multimedia. **British J of Ednl Tech** 27(2), 1996, 92-105.

EDUCATIONAL EVALUATION

Nardvall, Robert C and Braxton, John M. An alternative definition of quality of undergraduate college education : Towards usable knowledge for improvement. **J of Hr Edn** 67(5), 1996, 483-97.

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Association of Indian Universities
71st Annual Meeting

A. GNANAM

Presidential Address

K.V. RAGHUNATHA REDDY

Inaugural Address

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S.V. CHINDHADE

A Toccata for Fifty
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UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

ASSOCIATION OF INDIAN UNIVERSITIES 71ST ANNUAL MEETING

Excerpts from the Presidential Address

by

Prof. A. Gnanam, Vice-Chancellor Pondicherry University

Our higher education system is one of the largest in the world. In spite of all its maladies, it is destined to face the challenges of the 21st century, no matter whether those challenges are related to economic development, technology absorption, technology development or even spiritual or philosophical development. It is huge, diverse, and widely dispersed. It is a time tested system and a functional one at that. Therefore, we can be legitimately proud of being a part of it, in spite of its maladies. If some of us are critical of the present status of the higher education, it is nothing unusual and in fact it is a healthy concern as I have not come across any academia who is satisfied with their system of higher education, no matter whether he is coming from Great Britain, United States of America or Australia. It may appear as though our higher education system has no specific system-goal or goals, but it had always responded to the national needs whenever there was a specific demand, almost immediately and effectively. For example, when we needed more engineers at the time of Chinese aggression in early 1960s, universities had redoubled their pace and generated engineers of high calibre with the available infrastructure in a short span of time. Likewise, when the computer era had come in a large way through the advent of personal computers in the early eighties at least in our country, the universities had geared themselves, exploiting the mathematics and physics faculty to generate a large cadre of world class computer scientists or applicationists within a decade. We never had depended on foreign expertise to train our teachers as it happens in many third world countries. In fact, the entire higher educational system appears to me as a huge giant perhaps half slumbering for want of adequate nourishment, but potentially capable of doing anything with appropriate support and direction. Nonetheless we may have to take note of our shortcomings and try to do something remedial so that it can serve us better. In that spirit, I would like to discuss with you some relevant points, which in my opinion, had affected the system of higher education as a whole and the liberal arts and science universities in particular which had rendered them to appear anaemic and a bit emaciated.

I would like to share with you briefly a few of the principles or practices in the past that had gradually eroded the image of our education system in general and thereby caused considerable damage to our good old universities viz. the liberal arts general universities in terms of their esteem in the public minds. I would also share with you a few remedial steps that we should consider taking in reversing the situation. The first event that had caused a considerable damage to the image of our universities was the well intentioned move of establishing the various national laboratories outside the university system. This single event had completely weakened the research in the universities by diverting the best of available human and monetary resources. What was left with the universities, consequently was the responsibility of training the research scholars rather than undertaking any purposeful mission oriented research. Research funds were consequently diverted to these national laboratories, which had deprived the universities of being major partners in generating new knowledge, though it has been identified and entrusted as one of major functions of the universities, along with teaching and extension.

No other country in the world had done this kind of damage to the university system. Many countries in the world have had some research organizations outside the university system, but they were all established with a specific mission in developing highly specific knowledge and technologies. The CNRS of France, CSIRO of Australia, the Maxplank Institutes in Germany were all established for certain specific missions related to certain specific technology or the development of certain products. Unfortunately, we have gone into broad spectrum research institutes like the National Physical Laboratory, National Chemical Laboratory, Centre for Cellular and Molecular Biology, National Institute of Oceanography, National Botanical Research Institute, which are not in real sense of the terms the research institutes of that specific types that we find world over. They are very broad based and really the 'subject of study' institutes covering all of physics, chemistry or biology. I can understand the rationale for establishing institutes like, Central Leather Research Institute, Central Drug Research Institute or Central Electrochemical Institute, but cannot comprehend the idea of National Physics, Chemistry and Biology Institutes. They are at best mono-faculty universities, committed only for research, very much like law or medicine or regional language universities that are coming up now, in increasing numbers. I have no doubt that if such facilities were established within the university system, they would have enhanced the quality and image of our universities. By separating the vital research activities from the universities, we have neither done justice to scientific research nor to the academic advancement. I do not think, these laboratories had done anything significant that a university system could not achieve with the same magnitude of inputs. Prof Bhide, a good friend of mine and a former Vice-Chancellor of Pune University, used to say, that the funds spent on the landscaping and maintenance of the lawns of these national laboratories are far more than the entire budget of an average sized university in our country. How I wish such institutes were within the university campuses and thus sharing the resources and enhancing the quality of teaching and research!

The second major move that had hurt the universities was the bifurcation and removal from the general universities of the technical and professional education. The IITs and IIMs are no different from the universities either in their mission or in their methods. Any one of the universities could have become an IIT and IIM if the extent of support and foreign tie-ups were extended with the proper thrust and direction. One should see the range of faculty in any typical IIT. They have all the faculties (subject speciality departments) of any other typical liberal arts university, ranging from humanities, basic sciences, social sciences, and even languages besides some engineering subjects. Except for the high input and the 'clout' of having the prestigious word 'technology' suffixed, I do not see any difference between IIT Madras and S.V. University, Tirupathi or IIT, Madras or Annamalai University or for that matter, between IIT Kanpur and Aligarh Muslim University. The IITs also offer degree programs in the field of basic sciences and in social sciences as well. These traditional faculties in the institutes of technology have very marginal contribution to the "Technology" education of the predominantly large undergraduates who are trained. True, there are such institutes like CalTech and M.I.T. in U.S. and in other countries but not as an alternative to the university system. They may have developed certain additional facilities for practical training to provide the required skills but otherwise they only supplement the universities.

The trend of divesting the traditional universities from having the various professional faculties started with the establishment of independent State Agricultural Universities and it is now extended to other professional and non-professional subjects also. They now include, technology, medicine, management, animal husbandry and the list is now expanding to the faculty of Law, regional, national and classical languages. They all have become mono-faculty universities with the result, the traditional *liberal arts universities have been mostly reduced* to confine to the teaching of undergraduates and graduates in the limited areas of basic sciences and social sciences besides various languages. All the splintered mono-faculty universities, deemed universities and other categories have taken away the substantial portion of the brighter sectors of our academic programs leaving very little to the general universities to attract the bright students and higher resources. This had affected all the 155 and odd number of the general universities and nearly 95% of the total of about 6 million students. From a recent issue of AICTE Newsletter, I gather that the total enrolments of all Engineering, Technology, Management, and part of their Computer Science are only about 2.5 to 3.0 lakhs compared to nearly 60 lakhs of students in the general stream. The number of students enrolled in the professional courses are of course, much smaller. The following table gives the details of budget allocation. (Total Ministry of Human Resource Development budget approved for 1994-95).

Even a cursory look at the non-plan allocation of funds by Ministry of Human Resource Development for the year 1994-95, not including the States' Plan and Non Plan provisions and the 8th Plan provisions of the Centre, will reveal that for every student undergoing training in technical institutions is provided with as high as 13 fold of the per capita allocation for a student in the general universities. The same pattern of differential treatment could be seen in all the other components of governmental allocations for general and technical education sectors.

If we take into consideration the fact that a large number of 450 *engineering colleges are self-financing*, and all of them are *affiliated to the general universities*, the ratio will go up further than indicated above. The important point is that the Government, the only provider for education, has perception that higher general education is something ordinary and of *'janatha'* category catering to the mass of the student population for no specific purpose or advantage to the nation. This is reflected in their allocation of as much as 14% of their total education budget for training a couple of hundred thousand students while apportioning only marginally higher percentage viz. 19% for the general higher education that caters to about 5.5 million students with about three lakhs of teachers.

If we look at the same facts and figures from another angle, the discrepancy will be evident even more glaringly. In a recent report from the outgoing Vice-Chancellor of the University of Roorkee, it has been brought out that in general the IITs spend as much as 2.5 to 4.0 lakhs of rupees per student per year, while the University of Roorkee, which is also a technical university, is spending only about a lakh of rupees. I could not help comparing the 'unit cost' worked by the Justice Punnayya Committee at a mere Rs. 20,000/- for a social sciences students and about Rs. 25,000/- for science students in the general universities. In fact these 'unit costs' of students in the liberal arts colleges affiliated to any university will be very much lower and probably around Rs. 5000-8,000/-. I do not think I need to belabor any more in highlighting the disparity in inputs between technical and general education. However, I do not

Table-1 : Funding Pattern for Technical and General Higher Education

Type of Edn.	*No. of Univs.*	*No. of Colleges*	*No. of students (in lakhs)*	*Funds (in crores) (Rupees)*	*Per capita*
Higher Education (General)	155	8200	55	697.99	1269
Higher Education (Technical)	24	*450	3	486.29	16210

*A large number of them are self financing colleges.

see any justification in demanding a better performance from the already starved and condemned outcast of the academia. We are talking of quality and relevance and we are talking about vocationalization and career orientation of the condemned cousin for getting that vocationalization and career orientation are as much needed for the undergraduates of the Technical Education stream as they are in no better position to fit into any technical job as a general stream graduate. I am very happy to learn that many universities of technology are actively pursuing the career orientation efforts through special training courses. Apparently, quality and relevance are evading even the technical education. This is in spite of the fact that we have spent more on technical education right from the 1st Plan (1951-56) through 8th Plan (1992-97) than what we have invested on higher general education. The cumulative amount spent since the first plan till today for the development of technical education is Rs. 5453 crores while the figure for general higher education during the same period is only Rs. 4490 crores. These figures should be looked in the backdrop of the number and size of the institutions and students involved in both the systems of education. (Details taken out of Table 6 of DPEP studies-2 entitled *'Budgetary Resources for Education'*, 1951-52 to 1993-94; brought out by the Department of Education, Ministry of Human Resource Development.)

Another point of relevance here, is our small study on the employee profiles of some of the small and medium scale industries. Obviously, our conscious effort to support substantially the technical education is to promote and sustain industrialization of the country. It is on the presumption that when the fruits of our globalization and liberalization of our industrial and economic policies are realized, we should not face shortage of technical personnel. That, perhaps was the intention. However, when analyzed, the number of graduates employed, technical or otherwise, in these industries, we find that there are only 4 to 6% of them with technical qualifications (i.e., B.E., and above) and nearly 90% are the graduates from the mainstream of liberal arts education. In other words, we need nearly 10 or more of general education graduates for every engineer employed even in an industry. Therefore, even from the industrialization point of view, we must strengthen and expand our general universities and colleges with adequate support.

I have belabored with these figures and facts not to say how one sector of higher education is preferred against the other, but to drive home the point how if the technical education had continued to be part of the general universities, as it used to be in our country in the past, and as it is world over even now, the university system would have flourished and performed better than what they are today.

Another trend that has eaten into the resources of the universities is the proliferation of private foundations conceived and established around and by the erstwhile leaders of our academia from the science and technology organizations and public life. Delhi School of Economics with the support and patronization of the leading economists in the Government, Madras Institute of Development Studies, Madras School of Economics, Jawaharlal Nehru Centre for Advanced Research, V.K.R.V. Rao Centre of Economics, a score of other foundations function in the name of living or late legends. They seek and siphon out of either the education budget or S&T budget operated through various governmental agencies of what legitimately should have come to the universities. Most of these foundations last until the founders survive and then continue to be a drain on the government for some years before folding up. On the other hand, if these leading figures associate themselves with any university of their choice and promote the areas as of their choice, bringing with them the rich experience they have gained and the funds that they could muster, they would have enriched universities both academically and resource wise. The centre or department with which they were associated would thrive for a long time and benefit the generations of faculty and students. I do hope that our luminaries emulate the Nobel laureates, and the Presidents of the advanced nations in taking up the prestigious Chairs in the leading universities without wasting their time and effort in establishing a separate outfit for whatever benefit they desire.

Indian universities have been established in the long tradition of the European establishments to provide higher education to the increasing number of aspirants. We, in India, never had the tradition of organized — organization based — mass education in general and higher education in particular. The university stands for providing multi-faculty and multi-disciplinary education-encompassing the entire-universal-spectrum of knowledge, simultaneously creating a corporate atmosphere for faculty and students belonging to diverse areas of study to interact, think and learn from their coevals belonging to other disciplines. Everything that is known to the human kind was collated and made available to the aspirants under one roof. As the quantum of knowledge grew, the universities became larger catering to the entire post secondary students. The size of the western universities both in terms of the number of subjects taught, and in terms of the faculty and students enrolled substantially increased. There was a concomitant increase in the quantum of input. There has been no distinction between the liberal arts subjects or professional areas of study. They still cater to undergraduate students predominantly, along with the postgraduate and research students. All the major milestones, in the progressive growth of science, technology and medicine, had emanated largely from the universities. Whether it is a Newtonian Physics, or Einstein's discoveries, or the discoveries of new elements and their unique properties and their place in the periodic table are all determined by the scientists and faculty of the university system. Even today, whether one looks at America, England, Australia and even the East European countries, it is the university that is the intellectual center generating knowledge and generating human resources and they enjoy an unenviable esteem.

What has gone wrong in India? Why the governments shun the universities? If they feel promoting something essential for the national welfare, why do they create a different edifice. Why do professional educationists want to move away from the general stream? Why do intellectuals and leaders of politics, social movements and scientists, given an opportunity like to keep themselves away from the university milieu? What made the university system to get into this self-emaciating situation and what we should do to redeem the situation are some of the questions for which the answers should be found.

It is my conviction, that the universities have got deeply entangled into the structural frame of the last century from which they find it difficult to extricate themselves. The very management structure, the size and unwieldiness of their various authorities such as Senate, Academic and Executive Council and above all the garb of academic autonomy with which they had resisted any change from without are the fundamental causes for their present predicament. They had resisted innovation, and had lost the confidence of the provider and the partner — the Government and the professionals. They all, including the senior scientists and public persons, feel that they could do what they need only when they get out of the university system. Scientific laboratories had to be established outside the system, if they were to perform with a different administrative structure. Professionals thought that they were the minority in midst of the majority of liberal arts who controlled the functioning of the university. Senior scientists and other leaders feel that they will have no freedom and respect, if they come back to the university. If the downward slide of the respectability and faith of the university system is to be arrested, it is urgent that we change the management structure.

The out-moded administrative structure is the one that damages the image of the traditional universities. It had given the impression that nothing much can be done effectively and quickly in this system and to some extent it is also true. Therefore, those who want something done, find it easier and convenient to start new institutions adopting a better management model. Even the philanthropists who wish to contribute to education, get the feeling that a new type of institution with a more favourable management structure such as the IITs are the better place to donate. The term 'University' has become synonymous with orthodoxy. After all, I do not see any significant difference between the IITs and the traditional universities either in the range of subjects offered or in the quality of the faculty except that they have a reasonably good management system that is responsive and effective. A reasonably small court, and other academic bodies, with no scope for politicization and fair representation from all sectors of education in the governance should be able to restore the confidence of all.

Once the requisite modifications are made to bring the management structure very similar to that of IITs and IIMs or better, we must be able to infuse confidence in all the sections of academia, whether general or professional. I would like to plead to all those concerned to take some active steps to implement at least the accepted or acceptable changes indicated in the various reports, that are required in the management structure. This is the key step that might give a chance for resurrecting the sliding image and resources of the general university system.

Another major change that we should do rather urgently is to get out of the affiliating mode of dispensing higher education. None in this system is fully responsible for quality. With the accreditation system well organized both for general and technical education, there should be no difficulty in conferring full independent status to all the well-known colleges as it had been done in U.K. and Australia in recent years. We may not give a full fledged university status and can do so after they are duly accredited. While doing so, we can integrate and merge a small number of contiguous institutions and give them the prerogative of conferring their own degree. In Australia between 1988 and 1994, 19 universities and 44 colleges became 36 universities through an extended process of amalgamation and I think we must be able to do such an exercise at least progressively.

It is my view that each one of the universities, deemed universities including the IIT types should reverse the process of disintegration of the system and restore the composite nature of our universities by starting afresh faculties of liberal arts and science, engineering and technology, medicine, agriculture and law besides other things. Likewise, the mono-faculty universities should also diversify into multi-faculty systems. All universities should have both undergraduate and postgraduate programs so that each and every campus will have a minimal critical mass of student population making the system academically viable. It is not a difficult job, if we consider that our system is so young and small catering to only 5-6% of the relevant age group and it should grow to accommodate at least 25-30% of the target group as is has been elsewhere. That means at least a four fold increase in student enrolment can be expected in a decade or two in each of the categories of universities — mono-faculty universities, institutes, and colleges. Therefore, they have ample scope to diversify, expand and thereby become a university in the real sense of the term. Then there will be greater flow of funds to each one of them and the disparity that now exists between the institutions of higher learning will disappear.

In conclusion, I may say that in the higher education sector, the general universities get a step motherly treatment, by the government and public because of their sheer size in number and their outmoded management structure. Systematic emaciation of the system began when the government decided to support research in science and technology in a large way but considered that the universities were not the places to invest. The subsequent trend to separate professional education into independent mono-faculty universities aggravated the situation. With the mushrooming of private foundations eating into the resources of the universities completed the emasculation of the liberal arts universities. All these had happened because, the university system was not able to change with the time and stuck with the self strangulating management structure, including the affiliating system of dispensing education — its pre-occupation with the 'minimal standard' concerns through centralized external examination, when the clientele were expecting quality assurance and relevance. Consequently, it is left with 'unwanted' and unattractive (to the students) academic courses, with which it can neither sell its products nor resurrect its lost image.

If the universities in India are to gain the esteem they once enjoyed in our country and even now enjoy the world over, they should change their management practices and revive all that had gone out of their portals like research, professional and 'relevant' programs of studies. They should become truly multi-faculty universities with an eye on quality and credibility.

I know that I have said nothing new. I have repeated the known only to hasten some action, since the old maladies continue to afflict the system. I would like to conclude by recalling what my illustrious predecessor had already said three years ago: "Knowing what to do and not caring to do it" can cause great harm not only to the system to which we belong, but "can cast a shadow on other national endeavours as well".

Excerpts from the Inaugural Address

by

Shri K.V. Raghunatha Reddy
Governor of West Bengal

Higher education in India has travelled a long distance since the establishment of the three metropolitan universities in Calcutta, Bombay and Madras in mid-nineteenth century. Calcutta's jurisdiction from Peshawar to Rangoon has shrunk to a few districts in West Bengal and with the setting up of a large number of new universities, so has been the case with the most of the other universities of the pre-independence period.

In the first flush of independence, the search was logically for the discovery of the soul of India which held centre stage in the Radhakrishnan Report. Education needed to be decolonised and linked to Indian ethos and culture. The leaders of the new nation — Pandit Nehru in particular — represented a happy amalgam of both nationalism and internationalism. Traditional India no doubt needed to be invoked to resurrect some of the sterling virtues of tolerance, piety, humanity and humanism, yet, at the same time independent India had to carve out a distinctive place in the comity of nations. Science, technology and diversification of specialism were indispensable for both redirection of talent and rebuilding the nation. The IITs and CSIR establishments were no accident in history. These formed an integral part of a vision to equip the nation with scientific talent as also the temperament to cope with nation-building activities as well as to compete with international scientific developments.

Unfortunately, with the passage of time, some of the grand missions of national reconstruction fell steadily by the wayside. Internationally, the bipolar world and the long cold-war regime created both political and intellectual uncertainties. Particularly, the confrontational scenario of internationalism took a heavy toll of human-development oriented scientific research. Instead, science was perverted to perpetuate the arms race. Globally the situation inflicted grievous blow to genuine scientific enquiry and to the search for amelioration of human misery.

Our higher education has been western-oriented which went unabated even during the post-independence phase. Despite frantic efforts to build a self-reliant scientific base, our higher education system suffered heavily from brain drain. It was Gunnar Myrdal who sensitised us to the undesirable phenomenon of intellectual conditioning of our scholars at the prestigious overseas institutions like Harvard, Oxford or Cambridge.

Higher education in a global village dominated by the hegemonic economic forces has to refashion itself to face the trauma of a highly competitive intellectual world. We are caught between the competing demands of a globally oriented scholarship fed by cyberspace and internet and the national and even micro demands of essential human resource development in terms of basic literacy, gender equality, human rights and communitarian values. There is the other strand of 'environment'-related sustainable development philosophy that has been impelling fairly drastic changes in our educational curricula. Environmental sciences and a variety of cross-bred sciences, bio-technology, genetic engineering, computer-aided and powerful information processing methodologies have been pulling down the traditional boundaries of all sciences — both physical and social.

In many universities pure departments are fast giving way to 'schools' or 'interdisciplinary' centres in a bid to reorganise teaching and research agenda. Alongside this, there is a noticeable trend towards techni-cizing society which has necessitated a degree of vocationalization of education. Large scale 'tertiarization' of education in the interest of creation of diverse function-specific skills is currently a universal phenomenon. Our educational system has for varied reasons been slow in catching up with this new societal demand.

Privatization of education in the form of private universities, set up by private corporate sector would not help us to achieve the noble objectives set out in our constitution.

Having had the opportunity to be present here, I request you to consider two basic issues that are uppermost in my mind: One, how to impart higher education to the greatest number of students without charging a high price for it and how to restore a place to values in our programme of higher education, so that we can make better human beings, not just earning robots.

Information System for Reassessing Science Education in Colleges

Malti Goel*

Introduction

The development of higher science education system in India has been a major policy concern of the government since Independence. The goal has been to carve out a path towards industrial development for a sustained economic growth. This has led to a vast infrastructure for higher education and a comparative advantage in terms of number of scientific & technical manpower.

Indian education history is perhaps the longest and dates back to Aryans around 1000 B.C. The Gurukul system set the first example of formal education. The students stayed with teacher, served him in all possible ways and *Guru-Shishya* relationship was important. Only a class of people were given privilege of getting educated and they would impart their wisdom to rulers or to people at large. These centres continued to grow over the period. However, after a glorious rise, there was a decline which became more pronounced during the medieval times. Outside invasions caused much destruction in society and greatly affected the education system. To redeem the situation, several movements began during the 8th century for the spread of elementary education system throughout the society.

In the 19th century, major changes took place when westernized pattern of education system was introduced as a result of British colonization in India. The first college came up in 1794 in Guindy. Between 1830 to 1850 four engineering colleges were prominently started at Calcutta, Poona, Bombay (*now* Mumbai) and Roorkee. The Universities of Calcutta, Bombay (*now* Mumbai) & Madras (*now* Chennai) came into being in 1857. This gradual development of higher education continued over a period of next 90 years. There were 27 universities and 542 colleges including those offering diploma courses with student enrolment of 10,000 at the time of independence. Compared to this, during the last 50 years mamoth expansion of higher education has taken place and the number has increased to 229 universities, over 8000 colleges and 950 Polytechnics with an intake of more than 4.6 million students at the graduate level.

Achievements and Growth Profiles

At the Universities & Colleges

A highly structured growth at the highest level, universities & colleges increased by a factor of over 10 since Independence, 30% of these catering to science & engineering disciplines, is indeed tremendous. The decadal profile of growth of educational institution is shown in Table I. Exact data of Science Colleges is not available. It is estimated that more than 3000 colleges would be offering science disciplines (including about 800 professional colleges). The S&T manpower in India is assessed to be the second largest in the world, however, the numbet of trained personnel engaged in R&D per thousand population is rather low at 0.37. The state of science education has suffered from lack of infrastructural support in general and lack of reorientation in particular. The exceptions are six Indian Institutes of Technology, regional and a few other institutions, that have not only represented major reform in higher technical education from traditional British pattern introduced before Independence, but have also filled up the void in postgraduate engineering education existing at the time of Independence.

The average growth rate of S&T personnel during the period 1950-91 can be quantified as more than 20% per year. Between 1950 and 1990, there occurred approximately 15 fold increase in the outturn at the graduate level, 22 fold increase at postgraduate level and 38 fold increase at doctorate level in natural sciences.[1] The ratio of graduates to postgraduates approximated at 1:0.2. In the engineering technology, while the graduate outturn has increased 24 times in the same year, the postgraduate level increase is only 11 fold. Council of Scientific & Industrial Research brings out directories on outturn of scientific and technical manpower in different fields.

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Polytechnics and Vocational Schools

Polytechnics and vocational institutes constitute second level in higher education producing technicians and skilled labour work force. The importance of producing second level technicians in the industrial growth has been well recognised and the polytechnic education has also undergone a phenomenal growth in numbers. At the time of Independence, 53 institutions offered diploma courses in a few related disciplines. This number has increased to about 950 polytechnics today covering more than 100 disciplines, (of these about 50% institutes are self-financing). Recently, some regular colleges under the University Grants Commission promotional efforts have introduced vocational courses as a drive towards vocationalisation of education.

The Industrial Training Institutes (ITIs) and vocational schools have been started in all the states. These institutes and schools, both public and private funded, are expected to train secondary school students with 10 years of schooling, to obtain skills and more job opportunities. However, there have been serious lacunae in terms of flexibility and lack of modern facilities in these institutions. The major niche has been created by Computer Training institutes, especially in private sector, which have grown dramatically in student numbers, filling up the much needed gap and have also created a niche in the international software market. The rise in their enrolment is due to market driven demand as well as from a number of other supporting factors.

Trend analysis of the growth pattern of secondary and tertiary level manpower in science and engineering disciplines indicates that there were 1.86 million secondary science students produced in 1990. From these, only 0.2 million graduated in science and engineering disciplines in the same year. According to an Institute of Applied Manpower Research study, 45 thousand engineers graduated in 1991, whereas number of diploma holders was 65 thousand. It is estimated that the country has produced 0.8 million engineering degree holders and 0.4 million doctors since independence. The total stock of S&T manpower is about 4 million.

Management Institutes

The postgraduate management training is important contributory factor in developing business & marketing skills and is placed highly in the job market. The Indian Management Institutes are distinguished for management training. Besides there are a number of other institutes, about 400 in all, offering management courses. New forms of management courses hybridizing management and technical skills are being evolved at IIT Delhi.

Research & Development (R&D) Institutions

India is unique in having a broad based R&D infrastructure, having no parallel among the developing countries of the world. A multi-dimensional growth has taken place at several levels.

At the Central Level: A chain of R&D laboratories and Centers of Excellence have been created for intensifying research activity throughout the coun-

Table 1: Growth Profiles of Education Infrastructure and Human Resources in Science & Engineering

Year	Number of			Number in Thousands				
	Universities	Engg. Colleges	Polytechnics	H.S.Sci. Students	Science & Engineering Graduates	Post Graduates	Doctorates (Ph.Ds)	Technicians
1950	27	58	53	75.6	14.3	1.8	0.083	01.8
1960	65	118	195	125.5	34.5	7.1	0.35	16.5
1970	109	163	309	229.7	120.1	19.3	1.51	24.3
1980	140	226	332	629.3	166.9	31.2	3.12	27.0
1985-86	165	358	746	-	-	-	-	-
1990	194	424	948	1860.0	213.3	45.4	4.07	68.0

try. According to R&D Statistics of Department of Science & Technology, there are about 400 central level Research & Development institutes[2] created under the government scientific agencies, University Grants Commission and central ministries. The scientific agencies play the role of both sponsoring as well as performing R&D. The central ministries not only have setup Science & Technology Advisory Committees, to draw perspective plans and to identify latest technologies for absorption in the relevant sector, but some have also established exclusive institutional structure for promoting science and technology (S&T).

At the State Level: There are over 700 state level R&D bodies and institutes engaged in promotion of S&T in different states. These bodies came up with the idea of promoting traditional areas in which their strength existed. Data on statewise distribution of these institutions has been compiled by Department of Science & Technology.

At the Industrial Level: Industry in India has been slow in contributing towards R & D, despite government's extensive support and incentives. The contribution of industry is rated at 0.67% of the total turnover, a rather dismal figure in comparison to some advanced countries having a share of between 4 to 10%. In numbers, there are approximately 1300 recognised in-house R&D units in both public and private industry.

Major Threats to Science Education

Declining student interest in science stream and under utilisation of trained scientific & technological manpower in nation building are serious threats to otherwise well structured higher education system in India. On the one hand, there is lack of suitably trained manpower for the jobs in hand, while on the other, highly trained manpower of premier institutions like IITs and medical colleges leave the country not finding commensurate job outlets within the country. A serious shortage of science postgraduates and Ph.D. scholars is anticipated in the near future for the sponsored research projects.

Is science education in our system at the root of this or is it a global phenomenon ? Pattern of science education is being debated the world over. Two domains in which science education can be assessed are subject content and development of science based skills. These factors are examined in the Indian context.

The Subject Content in most colleges is largely controlled by the university, yet if one compares different colleges, there will be large variation in the intensity of experimental & technological training. A study conducted by Sharma and Ahmad showed serious shortfalls in functioning of science laboratories in colleges.[3] Moreover, in teaching, adequate stress on topics such as history of science as well as about institutions or individuals that have been centers of scientific activity is not given. The relevance of science education to national development priorities suggests greater concern for public health, environment and resource management. It is noted that the changes/additions in the syllabi is a time consuming process, whereas, in this era of technology rapidity, frequent changes in courses and introduction of new programmes in colleges have become a necessity. Adding a socio-cultural dimension to education is expected to produce a better perception of scientific ideas inculcating spirit of creativity.

The development of science based skills is an important part of education anywhere. The future demand for S&T manpower is going to be for knowledge based skilled work force. The pace at with existing facilities and equipment are becoming obsolete as a result of increasing automation and computer aided design are threatening the education system. The skills of yesteryears would have no linkage with the future job demands unless continuously updated.[4] The enormous growth in information technology and media technology are imposing the other kind of pressure on the existing education pattern, demanding large scale growth of tele-workers not only for technical services or industrial jobs but also in education. Another dimension which has to be kept in view is that in the 21st century, many more jobs will be conducted sitting at home. Remote teaching with time sharing of science laboratories and campus residential facilities will become part of regular teaching programmes, demanding compression of laboratory based skill modules, in order to cope with increasing number of students. There is need for a major modernisation programme for the science education.

The Need for Networking

The colleges are our main source of S&T manpower, having a share of more than 87% of total enrolment at the undergraduate level. There is no doubt that science and professional colleges attract bright students, as evident from the stiff competition for admission and higher cut-off percentage. (In

IITs and many professional institutes student intake is not more than 2% of the total applicants). College education being intermediary between school education and real world of work, it is the mismatch among them that has led to either severe brain drain or under-utilisation of trained manpower.

New initiatives would have to be taken for creating new forms of awareness and skills.

i) Closer networking of educational and scientific institutions is recommended for facilitating better interface with real world of work. In this case science students can be accepted as apprentices in scientific institutions during a certain period of time and staff of the institutions can be associated with teaching for short durations. Currently, it has started happening in a few institutions for the advanced level courses. Also for some professional courses including architecture degree/diploma, training at a private office, as part of the university course, is well accepted throughout the country.

ii) The innovative approach in teaching to tackle local problems of the urban and rural environments is another requirement to be met. There have been a few examples by NGOs, who have carried out such innovations at the school level. At the college level, the activity could be synergised through external support. The various sponsoring agencies should come forward to set up Centers of Excellence in Science Education in selected colleges with the twin objective of making science education more attractive and effective in search of unfolded mysteries of nature as well as intensifying efforts towards laboratory facilities and innovative teaching technology.

iii) For bridging the gap between education and industry the following model is proposed. It is important to have better linkage between central level and state level support. The colleges are central to the education activity, as affiliated to the university they can have better access to state level R&D institutions. The industry on the other hand can interface with state level or private R&D institutions. In this model (Fig 1) a state level R&D body would act as Technology Innovation Centre to 5 - 6 colleges and closely interface both with the industry and the college. Such an initiative will require a complete information on science colleges, which is not available at one place. It is therefore strongly recommended that an Information System for the Science Colleges in the country is developed. The database on selected parameters would help in suggesting new linkages in skill development and also help in the planning process for manpower training.

Conclusion

In India high priority has been given to develop indigenous strength of high quality S&T manpower, who have also created a niche in the developed world. A well organised university expansion and research base in scientific and technical fields has been achieved. In the decade of 90s new demands are being made on the education system. The vital question is what shape science education will take in today's technology driven society? Assuming that science education will remain a starting point for life long learning not only in science & engineering fields but also in upcoming professions demanding knowledge based skills, the subject content and science based skills are two major factors which need to be addressed. It is recommended to create centers of excellence in science education at selected colleges. There is lack of information about several new

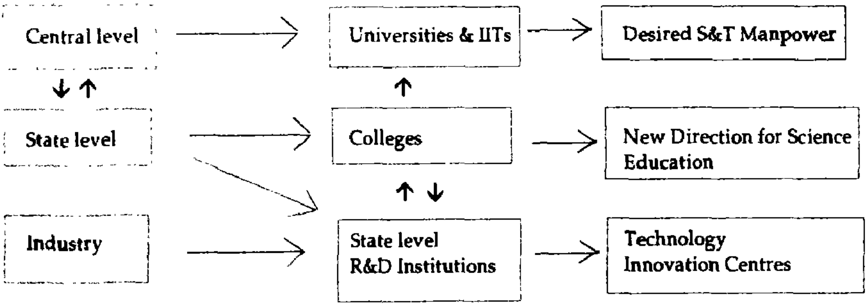
Central level
Universities & IITs
Desired S&T Manpower
State level
Colleges
New Direction for Science Education
Industry
State level R&D Institutions
Technology Innovation Centres

Figure 1 : Proposed Centre State Linkage among various institutions

(Contd. on page 14)

A TOCCATA FOR FIFTY

A Teacher Introspects

S.V. Chindhade*

How soon hath Time, The subtle thief of youth,
Stolen on his wing my three and twentieth year!
My hasting days fly on with full career,
But my late spring no bud or blossom show'th
.... the inward ripeness doth much less appear....
(On His Twentythird Birthday : *John Milton*)

At last, it happened to me. I could not help it, the trauma. I didn't want it particularly to happen and was a measure indifferent to it, as I could (much though I would) neither decelerate nor (—certainly not ! —) accelerate its pace. Indeed, I was even trying to forget its prospective occurrence and let it pass unnoticed when it actually occurred. But, as it usually happens, man proposes and woman disposes. My wife was prowling and she ambuscaded to pounce upon the first opportunity to wish me well, which she did and the loyal children in league with her, joined her.

I couldn't help it, the trauma. Recently, that is, on 30th June 1996 I crossed fifty. No denying, I was overwhelmed and infact a shade flattered, too, for a moment. I expressed my indebtedness to them, as all my happiness and success, no doubt, has emanated from their benedictions and from the like of them.

To be honest, I'm stunned, not at what the world thinks of me but at what I think of myself at this vantage point of life. What's so great and unusual about turning fifty? Normally it happens inevitably to everyone. The occasion assumes a public and festive character when only the privileged celebrities cross the threshold of fifty. Then it acquires the halo of Golden Jubilee.

In ordinary cases, as in mine, one just turns fifty; as I did recently. I was stunned because thinking of oneself and looking at oneself on such occasions is surely a stunning experience, for it lays bare unsavoury truths. Even so, a look within has to be cast one day or the other. In his long poem *Rough Passage*, poet R.Parthasarathy says—

As a man approaches thirty he may
Take stalk of himself
Not that anything important happens.
At thirty the mud will have settled:
You see yourself in a mirror.
Perhaps, refuse the image as yours.

Well by this standard, I have already delayed and procrastinated by twenty years this epiphanic exercise of looking inward. The time is ripe for it now for other reasons. The Holy Bible allows human a span of three-score and ten, that is, seventy years. The usual Sanskrit blessing says *jeevet sharadah shatam* (May you live a hundred autumns). We are told that when Mahatma Gandhi was blessed in these words, he fondly complained, "Why do you deduct twentyfive years from my life ?" Obviously, *Shatam* is minimum/at least a hundred.

What may be the reasonable span for an Indian who keeps normal health, has longevity in the family, is blessed with no family record of major maladies, does optimum physical exercises, practises a bit of yoga, shuns tobacco, bypasses drinks, both the hard and the soft varieties, plays no fast and loose, and has cultivated interests and hobbies to circumvent stressful times? Count me among these, and that may settle it to eighty ? In other words, at fifty, one-third is practically lived out.

The real question is, how has it been spent? What says life's balance-sheet after an audit? Does the deficit side loom large ?

My family has a line of lawyers, prosecutors and judges. It was, therefore, reasonable on my father's part (who retired as a judge) to want me to toe the line, fall into line (and even end up as a judge like himself). But I wanted to read literature (the gene of which is there in my blood for the third generation now) and become a 'professor', that is simply, a college teacher of English literature. I could surely pursue both the careers with equal efficiency and confidence. The situation was like what Robert Frost has spoken of in his poem *The Road Not Taken* :

Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveller, long I stood

---

* *Principal, M.U. College, Pimpri, Pune.*

And looked down one as far as I could.....
Then took the other, as just as fair......

They say, like artists and poets, teachers are also born and not entirely made. At least, it is a sad fact that in India nobody becomes a teacher by choice. Like greatness, teachership is thrust on many. It has never been a popular profession : neither Lady Lucre lures nor Dame Glamour glances amorously at a teacher. He is not the cynosure of the neighbouring eyes nor the idol of the iconolater. Despite his high ideals and precepts buttressed with examples, a teacher can hardly earn followers and a trendy charisma; he can barely cast a spell to bind with quality the huge numbers of learners under him. Infact, he may heave a sigh of relief that he is not despised and derided, for once upon a time, Socrates was made to drink hemlock, Jesus was crucified and Adi Shankaracharya was persecuted. Most of us are nowhere near them, — indeed innumerable light years away from them as teachers. Therefore, moments of fulfilment are only far and few between. D.H. Lawrence, the English novelist and poet, once experienced such a rare moment, as his poem *The Best of School* reveals —

As tendrils reach out yearningly,
Slowly rotate till they touch the tree
That they cleave unto,
and up which they climb
Upto their lives — so they to me.
I feel them cling and cleave to me
As vines going eagerly up; they twine
My life with other leaves, my time
Is hidden in their, their thrills are mine.

Certainly, a teacher is not a bonsai expert, far less a "topiarian artist" (as Russell puts it), for both are engaged in stunting and clipping the growth of a plant, while a teacher must help the saplings and plants to burgeon and bloom. Certainly, "A teacher affects eternity; he can never tell where his influence stops," says Henry Adams. And for the matter of that even an ordinary teacher like me may sometimes get an incredible feedback. I shall tell a tale to adorn the point.

I was certainly bowled over by a recent experience that I will with great vigilance treasure in my memory lifelong. Recently, a non-descript young person in his early thirties tracked me down one evening, asked me most modestly and without meeting my eyes whether I was Mr. so-and-so. After my identity was confirmed to his satisfaction, he pushed a thick envelop in my hand with the words that it was a *gurudakshina* sent through him by his sister who happened to be my student almost eighteen years back now ! On opening the cover I discovered several crisp currency notes of high denomination. The gentle brother told me that I had helped and encouraged his sister when the family was in dire economic straits threatening the continuity of her education. Well, frankly, I couldn't 'place' the girl easily and so thankfully returned the entire wad to the young man, saying that it was not really needed to convey her sense of gratitude and that I had done only what I ought to have done. However, the young man refused to take back the envelop, saying that his sister would feel hurt if I did not accept it.

More than eighteen years after ! I am still too overwhelmed to expand on the incident.

Candidly speaking, I took to teaching as a duck takes to water. Armed and groomed with good training under giant gurus like Dr. S. Nagarajan and Dr. Sujit Mukherjee, hot from the oven of the post graduate department of English at the University of Pune, blessed with fair looks and audience-friendly (microphone-worthy) voice and, what is more, harnessed with instructing batches of near-rural churls, I plunged headlong in teaching, almost with over-confidence and gusto, young and immature as I was then, twentyfive years ago, now.

I am at my wit's end. What may be the criteria to measure the achievement of a teacher? No, not in terms of the bureaucratic jargon of good self-appraisals, consistently good academic record, orientations and refreshers attended, seminars and conferences graced, and so on. Not even publications (for, ten-line letters to editors of bylane circulation papers on problems of kerosene shortage of Bofors or petrol price-hike are also counted among 'publications' these days !). I don't have the tripple formula of teaching, research and extension in my mind at this moment.

Do the criteria count upon

- What goals the teacher points out to his students ?
- What discipline and habits he hammers in them ?
- What ambitions and ideals he sets before them ?
- What vision he imparts to them ?
- What character he forms in them by appealing and inspiring them to lead their life in the light of conscience?

- What attitudes he instills in them ?
- How he refines their responses, hones their sensibilities, sensitises and cultures their appreciation? and ultimately
- What values he awakens them to ?

—What is my score in the light of these ?

Given my legacy of letters, heritage of health and healthy habits, an aesthetic sensibility and creative talent, would someone else have jumped a longer leap, scaled a higher vault? Indeed, not many are blessed with such an advantageous springboard as I was, and yet they seem to have done better. Were the efforts wrongly directed ? Were they inadequate ? Were they half-hearted ? Or, as a simplistic explanation, am I ill-starred ? Could the mediocre performance be blamed on hurdles malevolent and humiliations galore ? But, then, adversities are opportunities and adversaries are friends in disguise, the same way as Satan was a fallen angel with the potential for regeneration.

Setbacks and sabotages have been a way of life, making me immune to them now : *Mushkilen itani padi ke asaan hogayeen*, as Ghalib puts it. And a level-headed fellow mustn't let undeserved calumny dampen his spirit. "You are not blessed if the multitude does not laugh at you," said Seneca, and Socrates believed that an uncriticised life was not worth-living. Epictetus quips, "If you hear that someone is speaking ill of you, instead of trying to defend yourself, you should say : He obviously does not know me very well since there are so many other faults he could have mentioned." The greatest consolation is offered in the following Sanskrit *shloka*:

Asammane tapo vriddhi
Sammanat tapah kshayah
Satkarat punyahanischa
Nindaya sadgatir bhavet

(Insult adds to merit, honour decreases it; felicitation destroys it; calumny confers liberation !) In literary works often truth is stranger than fiction; in professional interactions truth should be stronger than faction !

To be fifty is a churning experience. It is intensely incredible because it is hard to accept that the days of youth are over and that spring has given way to autumn (though Keats consoles, *Thou has thy own music too*. Who deserves tobe fifty? A receding and greying hairline is not an adequate evidence of maturity and dignity of fifty years existence on the overpopulated surface of this earth.

Let me ask myself, do I enjoy my work, carry out my responsibilities with integrity, help people in their need and encourage the depressed ? Do I think thoughts fit for fifty ? Are my responses and reactions to ticklish situations tolerant and creative ? Do I like to loll in the hammock of complacency about life's outputs so far ? Is some work of real noble note to be done ? And is there any hope for jewel in the crown before the end of the road is reached? Am I capable of star achievements ?

Questions outnumber and outwit answers. But, then, isn't this vibrant *sitar* of conscience the melodious music of fifty ? And does it vibrate because I chose to be a teacher?:

Two roads diverged in a wood and I —
I took the one less travelled by,
And that has made all the difference.

Information System for Reassessing Science Education in Colleges

(Contd. from page 11)

colleges which have come up in 1980s & 1990s in large number and many of them in the private sector. An information system on colleges for better networking needs to be developed. In order to sustain in a competitive scenario, it would be necessary to plan for it now.

Notes & Acknowledgements

1. An earlier much different version of the paper was presented at an Orientation Programme for college principals organised by National Educational Institute for Planning and Administration. The author thanks Secretary, Department of Science & Technology for the encouragement.
2. The views expressed here are the responsibility of the author and need not necessarily represent those of the organisation.

References

1. N. R. Rajagopal, Y. P. Sehgal, S.R. Das and Sushil Kumar, Scientific & Technical Manpower in India - An Analysis of Trends, *CURIE*, Vol 1, No 1 April 1994, 24-35.
2. *Research & Development Statistics*, Govt. of India, Department of Science & Technology Publication, 1992-93.
3. G.D. Sharma and Shakti R. Ahmad, Science Education in Undergraduate Colleges: Some Issues and Observations, *Chemistry Education*, Jan-March 1986, 33-38.
4. Y.S. Rajan, Malti Goel and S. Wadhwa, Technology Forecast & Higher Education, *J. Higher Education*, Vol 18, 1995, 449-68.

Women's Empowerment

Sri K. Anbazhagan, Minister for Education, Govt. of Tamil Nadu, delivered the Convocation Address at the eighth convocation of Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University). He said, "Women's empowerment is a complex issue having many societal ramifications. It cannot be solved by women alone. Men also should understand the need for women's empowerment and support their cause. Women should learn to articulate their needs and rights in clear terms and work for them, without at the same time upsetting the domestic harmony and family life. They have to work tirelessly in their march towards their empowerment and a life with an identity of their own." Excerpts

These are days when women are making a mark in all areas of education and social development. They have established their greatness in all walks of life right from ancient times. Great poetesses like Avvaiyar, Kaakai Paadiniyar, Grammarians like Ponmudiyar, Nightingale of India Sarojini Naidu, writers in the renaissance movement, statesmen, administrators, scientists like Marie Curie, and mathematicians like Shakuntala Devi have emerged from among women. They have indeed demonstrated that women are in no way inferior to men.

Indeed, today's women have also exploded the myth that only men can perform on the battlefield or in activities showing physical powers. We are all aware of the role played by women in shaping and developing the Red Cross Movement all over the world. In addition to excelling in nurturing type of occupations like nursing, elementary education, secondary and higher levels of education and research, women have become proficient in police service, in driving cars, tractors and aeroplanes.

Women not only compete with men in competitive examinations, in manning administration, in managing industries, but also outperform them in all these highly competitive, high level managerial responsibilities and are more successful than them.

After our country became independent, women have demonstrated that they are quite adept in discharging their democratic responsibilities too. As voters they exercise their rights discerningly. They do not hesitate to contest for and accept positions in public life.

In the pure physical strength, women may have a comparative disadvantage in relation to men, but we must remember that the term 'strength' encompasses not only physical strength, but also relates to one's state of mind and strength of character. These too women possess in an abundant measure, as if to compensate for the lack of the former. Hence they are not in any way secondary to menfolk in terms of their courage and strength of mind.

In spite of all these points in which women score over men, how is it that in the social realities of life, woman has been subject to inequities and subsidiary status relative to men, within the family and outside in the society? The difference in age between the husband and wife may account partially for the higher status enjoyed by the man in the family in respect of decision making and other roles. But that does not mean that the woman should be deprived of all her rights and she should remain submissive to her husband, without any say whatsoever in the affairs of the family. This is a very unfair situation for the woman. This submissiveness later in the life develops into a sense of inferiority complex and becomes part of her personality reflected in her other roles of a daughter or mother as well.

Nature had designed man and woman as complements of each other. One cannot exist without the other. The ancient scriptures deified women as goddesses only to highlight the role played by them in providing continuity for the society and in perpetuating life. The great poet Bharathiar underlined this truth when he sang that 'love is the basis of life and life does not and cannot exist in the absence of love.

However these realities had been conveniently forgotten by man. The oppression of woman started quite early in history when man was acknowledged as the head of the family, as the breadwinner, as the guardian of the country, as the one entitled to education, to acquire the skills and to practice professions. Since he was acknowledged as the leader in all aspects, he became the custodian of the family property too. Women because of their innate interest in nurturing the children and taking care of the members of the family willingly acquiesced and recognised the importance of the security provided by the husband, never questioned his leadership nor made any efforts to change the situation in their favour.

In the early days, relationships within the family between husband and wife were based on love and trust. Further the earnings were rather low and just enough to meet the family needs. There was not much of a question of surplus or wealth. In such a simple life when wants were also limited, the issue of 'rights' did not figure much. But in the modern context, where the woman works as much as man, competing with him effectively in all walks of life, she has recognised the institutions which subtly and sometimes explicitly deny her the basic rights. Denial of rights does not imply lack of opportunities for woman but that though opportunities exist, women are denied the right to avail of those opportunities and to lead a full life.

Today nobody may deny the need for women's education. But still there is a feeling that providing education for women is a luxury which the rich may afford for their girls and the poor do not bother to provide the facilities of education for their girl children. The very parents who have given birth to girl babies consider them as a burden and try to dispose them off, by arranging to get them married even in their tender age, without being bothered about the consequences of such a marriage. So also people rejoice at the birth of male children whereas they tend to deplore the birth of female children. It is true that such hardened attitudes towards girl children in the society are firmly rooted in people's poverty, ignorance, superstitions and blind faith in religion. Yet it becomes the foremost obligation of the educated young women to transform such attitudes and bring about and develop the right type of values in the society.

Marriage may be an inseparable institution, for the furtherance of family and society. It is the means by which womanhood is fully realised by the girl. But on that account forcing them into marriage is violation of their rights. If that is necessary to provide security to her in life, then she should be made to realise it and then enter it, knowing fully well the implications of the act. Forcing her into early marriage, against her wishes, denying her freedom to marry outside the caste, forcing repeated pregnancies on her, compelling her to continue to live in matrimony even when her husband happens to be a drunkard, a sick or a womaniser, denying her the right to remarry in the case of her husband's death — all these constitute oppression and have been heaped on women since time immemorial. The state has brought forth several pieces of legislation to curb these forms of oppression — Child Marriage Restraint Act, the Age of Marriage Act, the Special Marriage Act, the Medical Termination of Pregnancy Act, the Widow Remarriage Act and many more.

By themselves they cannot transform the realities for women. Tampered by the force of habit and socially conditioned to accept a secondary role. Women continue to devalue themselves and have not benefited from the rights and privileges conferred on them by these Acts. They hesitate to accept social change, since they still subordinate their right to life for fear of losing their social status, religious sanctions being imposed against them, of bringing a bad name to themselves and their family and for fear of being ridiculed by their own kith and kin. They do not opt for change, worse till they condemn those who opt for such change. To give a particular example, many social reformers in India, right from Ishwar Chandra Vidya Sagar, Bharathiar, Thiru V. Kalyana Sundaranar to Thiru Periar E.V. Ramaswamy recognised the need for widow remarriages and sought to promote them in every possible way. But still the widow remarriage has not obtained social acceptance.

Why has widow remarriage not gained social recognition and acceptance? Again it is based on certain inbuilt inequities in family relationship. Man assigned 'Chastity' as a virtue to be upheld by women, rather than as a requirement to define his own relationships. He even elevated it, as the most desirable trait for women and glorified it by constructing temples.

His own personal life was characterised by permissiveness, giving rise to institutions of polygamy and prostitution. This misplaced emphasis on chastity as an exclusive virtue for women was responsible for creating obnoxious institutions like 'Sati' where the wife embraced death on the funeral pyre of her husband and if she were unwilling to do so on her own volition, the relatives forced her to do so. Raja Mohan Roy worked relentlessly to stop the practice of sati. Through his efforts, the British Indian Government passed the Prevention of Sati Act. After the passage of this Act, this practice has been given up by certain communities. But a few other community still persist committing Sati, and glorifying the act by erecting temples for the deceased women. The offenders who abet this type of murder are acquitted by the court of Law for want of evidence. Though the whole village had witnessed the ghastly scene of murder, none of them dared to depose before the Court, fearing backlash and ostracisation.

In a society thus characterised by religious fundamentalism and superstitions, women's rights and claiming them from men is not at all an easy task.

Whether in the Sangam age or in the Vedic period, we find that women were not denied their basic rights and could exercise their discretionary powers over matters relating to them and could utilise the opportunities available to them. Later in history came the division of society into castes when the Brahmin Community sought to exclude even their own women from learning Vedas and Sastras. Thus women were denied the right to learning and education. When the differences in caste and community became very acute, and untouchability was practised in its most acute form, women also became powerless and were reduced to total subordination by men. In the North India whenever wars and invasions broke out, the practice of *purdah* was imposed on women to save them from the invaders and then came many other restrictions to which women voluntarily submitted. Since they were unable to fend for themselves, they began to depend on their husbands for all their needs and eventually accepted dependence as a fact of their lives.

Another factor which contributed to this type of subordination and dependence of women within the family was that woman did not have property rights. Hence dowry was demanded and obtained at the time of their marriage by the bridegrooms' families. This practice of dowry has quickly spread to all other communities also, which did not have it earlier. In Tamil Nadu, however, in the early days, dowry was not in vogue, that bride price was given by the bridegrooms' family to the bride's parents in token of having brought up the girl child. But now the dowry system has taken a strong hold over every community and every day we hear of the atrocities committed on the young brides to collect it in direct and indirect ways. To prevent such atrocities and by way of recognising the rights of women, Periar E.V. Ramaswamy, the leader of the Dravidian Movement maintained even 65 years ago that daughters should have equal rights over family property. In Tamil Nadu, the Chief Minister, Kalaignar Karunanidhi enacted a legislation in March 1989, giving equal property rights for daughters as for sons.

Women's empowerment is a complex issue having many societal ramifications. It cannot be solved by women alone. Men also should understand the need for women's empowerment and support their cause. Women should learn to articulate their needs and rights in clear terms and work for them, without at the same time upsetting the domestic harmony and family life. They have to work tirelessly in their march towards their empowerment and a life with an identity of their own. The great poet Bharathidasan had laid down categorically that until women became independent, the independence of the nation is meaningless. In the literature, we find several attempts to uphold the dignity of womanhood. Hence women should use their education to recognise their status in life and to improve it by taking up and exercising their rights by themselves. Education is a means of liberation for everyone. But it is more so for women.

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MAJOR ECONOMI

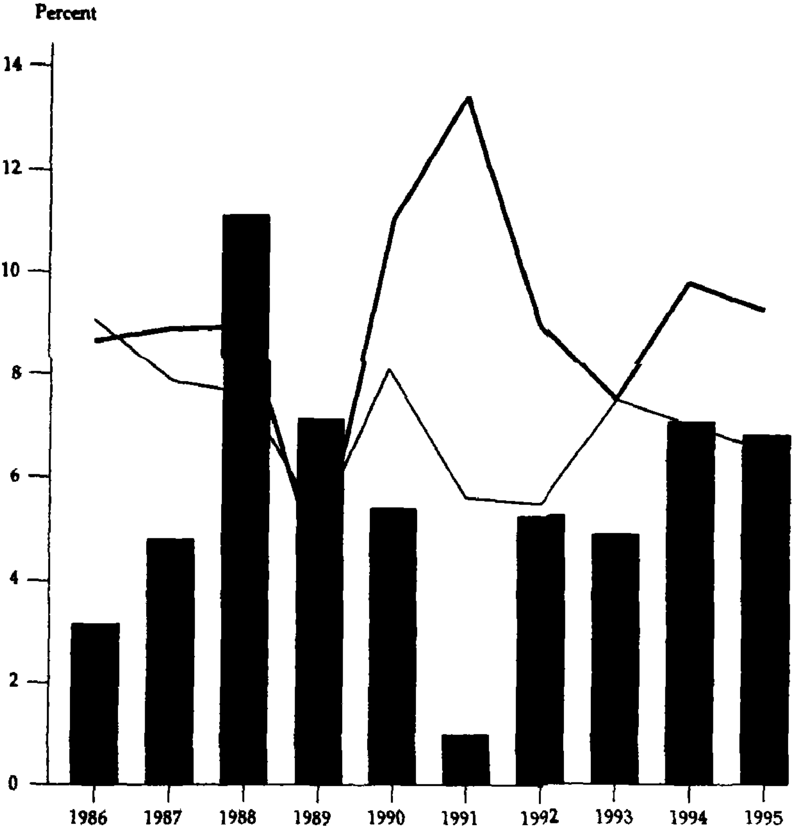
		1993	1994	1995	1996	1997
Gross Domestic Product*	% change	5.0	6.3	6.2	6.4	6.6
Agriculture	% change	3.3	4.9	0.5	3.0	3.8
Industry	% change	4.2	8.3	12.0	9.4	8.6
Services	% change	6.8	6.0	6.1	6.4	7.0
Gross Domestic Investment	% of GDP	21.6	25.2	24.0	24.5	25.0
Gross Domestic Saving	% of GDP	21.4	24.4	22.5	22.5	23.0
Inflation Rate	% change in CPI	7.5	10.1	9.5	9.0	8.0
Money Supply Growth	% change	18.4	21.2	15.6	15.0	15.0
Merchandise Exports	$ billion	22.7	26.8	32.4	38.2	43.9
	% change	20.3	17.9	21.1	18.0	15.0
Merchandise Imports	$ billion	24.0	31.3	39.6	47.9	56.5
	% change	3.2	30.4	26.7	21.0	18.0
Current Account Balance	$ billion	–0.3	–2.3	–5.1	–6.3	–8.0
	% of GDP	–0.1	–0.8	–1.6	–1.7	–2.0
External Debt Outstanding	$ billion	92.1	99.0	104.3	114.0	125.7
Debt-Service Ratio	% of exports	26.1	26.3	26.7	26.8	27.6

*Based on constant 1980 factor cost.

Note : All data are on fiscal year basis.

Source : *Asian Development Outlook 1996 and 1997*, Asian Development Bank 1996.

NDICATORS : INDIA



Economic Growth and Macroeconomic Stability : India

Legend:

■ Growth in Real GDP —— Fiscal Deficit/GDP —— Change in CPI

GDP — Gross Domestic Product

CPI — Consumer Price Index

SAARC Law Conference

The Fifth SAARC Law Conference which concluded recently at Dhaka recommended the establishment of a regional university for higher studies in law. A task force is reported to have been formed to prepare a policy paper on legal education. This was revealed by the president of the SAARC law, Mr. K.K. Venugopal, while presenting his report.

Dr. N.R. Madhava Menon, Director of the National Law School of India University, who floated the idea of a regional university, explained that such a university, having at least one campus in each member-state, would have a governing board of lawyers, judges and law academics, drawn equally from the regional countries.

The Chief Justice of India, Mr. Justice A.M. Ahmadi, while addressing the concluding session, strongly pleaded for the improvement of judiciary and for setting up special cells under the Bar Councils of respective countries for examining new laws before being enacted.

"If we cherish to adhere to the path of democracy, we must have to take benefits of socio-economic and legal developments and, of course, that have to be for improving the lots of masses, a vast of whom reside in slums", said Mr. Justice Ahmadi.

Mr. Justice Jassad Ali Shah of Pakistan in his address said, SAARC countries could learn from each others' experience as they have many things in common. He said complexities in election rules pose a threat to the growth of democracy in the South Asian countries. Mr. Justice Shah said there should be collective efforts to simplify these rules so that poor but honest people could get a chance to be elected as people's representatives.

In his presidential address, the Chief Justice of Bangladesh, Mr. Justice A.T.M. Afzal expressed the hope that the fifth conference would act like a pathfinder. He said in Bangladesh, a Judicial Institution Training Act had been passed and a judicial training institute set up.

During one of the sessions, former Chief Justice of India, Mr. Justice P.N. Bhagwati, came up with an idea of setting up a "National Judicial Council" in the SAARC countries for recommending appointments of Chief Justice and Judges of higher court. Mr. Justice Bhagwati explained that each country could form a Council of its own with the Chief Justice as its head and Law Minister, Attorney General, Leader of the Opposition and some jurists as members.

Some leading jurists stressed the need for more transparency in appointment and promotion of Chief Justice and Judges of the higher court. This was a pre-requisite for separation of judiciary from the executive, it was felt.

The participants laid special emphasis on removing the obstacles that bar independence of judiciary, though constitutions of the countries had guaranteed it. It was also pointed out that removal of racial and religious discriminations, restoration of social order and establishment of the rule of law were necessary for taking justice to the doorsteps of the people.

Over hundred leading jurists, judges, advocates and academicians from SAARC countries attended the conference.

Indian History Congress Meets at Chennai

The Tamil Nadu Chief Minister, Mr. M. Karunanidhi, appealed to Indian historians to do more research on the history of Tamils in its various perspectives including its 'glorious' past and socio-cultural character, rather than narrowing it to a history of a province or merely a study of an Indian State. He said his appeal was not to promote any kind of 'linguistic parochialism or racial fanaticism' but only to drive home the fact that Tamil society was an international order which had contributed differently and significantly to the evolution of the Indian culture. He was inaugurating the 57th session of the Indian History Congress, hosted by the Madras University's Department of Indian History in Chennai recently.

The Chief Minister said if one studied the emigration patterns from India, it was largely the Tamils, who went across the world. The 'Greater India' concept was evolved mainly because of the spread of the Tamil race. All these factors should be studied in depth by the historians without any prejudice which, he said, would go a long way to make a true comprehensive and better history of Indian people.

Prof. P.K. Ponnusamy, Vice-Chancellor, University of Madras, in his address regretted that ideas and movements of Tamil Nadu had not been properly highlighted by Indian historians. During the nationalist movement and thereafter, there were many socio-political movements in South India featuring peasants, tribals, Dalits, backward classes, women, students, labour and others. Leaders such as Kamaraj, Periyar and Anna had made unique and significant contributions to social justice in Tamil Nadu and India. Unfortunately these facts were not given due importance in the history, he added.

Prof. V.N. Datta, delivering the presidential address, said it was becoming increasingly difficult to write freely on matters concerning region, on some prominent personalities and on foreign affairs particularly involving sensitive issues. As freedom of expression of thought was an essential element for a historian's existence, he hoped the congress would never flinch from its commitment to dispassionate thinking and free expression so that in teaching and writing history they had risen above political, regional and caste prejudices.

Prof. S. Settar, Chairman, Indian Council for Historical Research, said the council would take steps to republish all source materials of Dravidian languages. A corpus fund would be created to promote Dravidian studies with particular reference to South Indian history. The council would soon open a centre in South India preferably in Bangalore for the convenience of historians in this part of the country.

Visva Bharati Platinum Jubilee

The Prime Minister, Mr. H.D. Deve Gowda urged teachers to play a pivotal role as facilitators to help the students join the process of social change in line with the ideals of Rabindranath Tagore. He was speaking at a function at the Uttarayan Complex to declare "closed" the concluding part of the year-long platinum jubilee celebrations of Vishva Bharati University. Tagore, he said, innovated the ashram way of life as a medium to revitalise rural economy, envisaging the students' participation in the process as an essential part of the educational mission.

Calling for drawing on Tagore's idea to demonstrate deeper commitment and involvement in social and community work, the Prime Minister said, "We must continue to give impetus to rural reconstruction programmes and encourage social work by students to promote rural development."

"This calls for a heightened sense of professionalism among teachers and a strong commitment towards their calling", he said. The Prime Minister said that on the threshold of the 21st century, the task of the teacher was more arduous.

Vyas Samman

The K.K. Birla Foundation has apart from other activities, an extensive programme in the field of literature. The Foundation has instituted four high level Sammans/awards in literature. The Saraswati Samman carrying an amount of Rs. 5 lakhs is given to an outstanding literary work of an Indian citizen in any of the languages included in Schedule VIII to the Constitution of India and published during a period of 10 years preceding the year of the award. Next to the Saraswati Samman, the most prestigious award is the Vyas Samman (now carrying an award money of Rs. 2.50 lakhs) which is given to an outstanding Hindi literary work of an Indian citizen published during the last 10 years. The work may belong to any genre of literary writing such as poetry, novel, short stories, play, history of language and/or literature, criticism, essays, biography etc.

"Hindi Sahitya Aur Samvedna Ka Vikas" (हिन्दी साहित्य और सम्वेदना का विकास) published in 1986, of Prof. Ram Swarup Chaturvedi, the well known litterateur has been selected for the Vyas Samman 1996. After Acharya Ram Chander Shukl's *'Hindi Sahitya Ka Itihas'*, this is the first time that a work relating to the history of Hindi literature has been selected for a prestigious Samman.

The Vyas Samman has been awarded to Dr. Chaturvedi on his important work on Hindi, *Hindi Sahitya Aur Samvedana Ka Vikas* (literature and the growth of literary sensibility). It is considered an important landmark in literary criticism in Hindi. In this Dr. Chaturvedi has discussed semantics, the role of language in society, literary thought, literary forms, experience and communication vis a vis the norms of literature.

Shri Chaturvedi's book attempts to present Hindi literature in the context of world-literature and major trends in contemporary human thought. The work acquires an added importance in the sphere of new relationships between literature and the society that generates it.

Peace Declaration

The 8th World Congress of the International Association of Educators for World Peace (IAEWP) was held at Split/Trogir in Croatia on November 26-December 1, 1996. The Congress adopted the following declaration:

The 8th World Congress of the International Association of Educators for World Peace declare its commitment to continue to follow the ideas and tasks to preserve the world peace and to prevent global ecological pollution.

Since 1967 when the idea of strong and continuous engagement of the educators for World Peace preservation was first explained by the founder of IAEWP Dr. Charles Mercieca, the organisation has developed into the important international subject, participating in the work of the United Nations and contributing to the World Peace and global security through the work of National Boards in the countries all over the world through its international conferences and through its seven world congresses held in the period from 1974 to 1996.

The Congress is committed to decisively continue to work on the project and programmes for educating and rising the future generations to be dedicated to the firm and just world peace preservation and promotion.

Its activity ought to be present in the family and in the community in the media and in the educational system.

This Congress supports the idea of UNESCO regarding creation of "Culture of Peace".

The Congress recommends that peace education, apart from being a study as a separate discipline in Peace Institutes, Peace Colleges and Peace Universities must be part and parcel of all different branches of knowledge (education) to enable different specialists to experience life as a whole for leading them to be just, non-violent and peaceful.

Economic Cooperation Among SAARC Countries

The Centre for SAARC Studies, Andhra University, Visakhapatnam proposes to organise a three day International Seminar on "Economic Cooperation among SAARC Countries: Challenges for the Second Decade" in the last week of March 1997.

The proposed themes for the seminar are : (1) Liberalisation of Trade among SAARC Countries : Intra-industry Specialisation in Goods and Services—Border or Counter Trade—SAPTA to SAFTA—Trade Financing; (2) Joint Ventures Among SAARC Countries: Infrastructural Facilities — Production and Marketing; and (3) Technological Cooperation among SAARC Countries: Transfer of Technology in the Areas of Agriculture, Industry, Health, Education and Meteorology.

Further details may be had from Prof. V. Pothana, Director, Centre for SAARC Studies, Andhra University, Visakhapatnam-530 017.

SNDT Varsity Convocation

Dr. A.P.J. Abdul Kalam, Scientific Adviser to Defence Minister and Secretary, Department of Defence R & D, Ministry of Defence, delivered the convocation address at the SNDT University. In his address he highlighted the role played by women in different sectors. Referring particularly to the need for indigenous technology development, he gave instances of the contribution of Indian women scientists. He asked the students to draw inspiration from their lives. Quoting Marie Curie, he remarked "life is not easy for any of us. But with perseverance and confidence in ourselves we must believe that we are gifted for something and this thing, at whatever cost, must be attained".

He exhorted the graduating students to share in the vision for a technologically strong India.

Dr. M.A. Varghese, Vice-Chancellor, in her report reviewed the working of the University during the year and focused on various activities and achievements of faculty and students.

At the convocation 7038 candidates were awarded various Degrees Diplomas and prizes by the Chancellor, Dr. P.C. Alexander.

News from Agricultural Universities

Agriculture — Towards New Horizons

The Prime Minister, Mr. H.D. Deve Gowda said that to accelerate the all round development and economic viability of agriculture, a new agriculture policy was underway. He said the draft policy focused on the agricultural research system to develop viable and location specific technologies for the benefit of the farming community. He was inaugurating a National Seminar on Agriculture

— Towards New Horizons at Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar recently.

He said measures were being taken to overhaul the entire extension network of the country to ensure that most modern technology was brought to the farm sector. All controls and regulations that were in the way of increasing incomes of the farmers were under review. He announced that the flow of credit to the farm sector would be doubled in the next five years.

Mr. Deve Gowda said the farmers were exploited in every sphere from the supply of seeds to the marketing of agriculture produce. Top priority in the ninth plan would be given to the agriculture sector. He said emphasis would have to be laid on raising the productivity level per unit of land and water. In the present atmosphere of global liberalisation and coming into existence of WTO, agriculture in India had vast potential.

The Prime Minister said that agricultural production and productivity had to be raised substantially to meet the requirements of the population. Efforts were underway towards building a viable seed industry as good quality seed was the basic ingredient for realising high yields.

Mr. Deve Gowda lauded the role of the Haryana Agricultural University in agriculture and rural development and said that it had been instrumental in generating trained manpower in many fields of agricultural sciences.

Mr. Mahabir Prasad, Governor of Haryana, in his presidential address, said that 91 thousand hectares of cultivable land of Haryana which came under arid and dry region needed to be converted into fertile land. To meet the need of food, fibre and shelter and also for protection of environment it was imperative that special efforts were made to maintain continuity in agricultural productivity and profitability. Applauding the efforts of agricultural scientists as also the hard work of the farmers, the Governor said that the state of Haryana had made tremendous progress in foodgrains, oilseeds, vegetables and fruits. Still more efforts were needed to increase their produce.

The Chief Minister, Mr. Bansi Lal, said that during the last three decades the state had registered increase in foodgrain production from 25.92 lakh tonnes to 113 lakh tonnes, while milk production increased from 10 lakh metric tonnes to 40 lakh metric tonnes per day making per capita availability of 620 grams per day.

He felt concerned over feeding the teeming millions and expressed need to identify and assimilate the major developments including technological changes taking place all over the world so that second green revolution could be ushered.

He said that there was vast scope to increase the productivity of different crops and called for legitimate efforts of the scientists to maximise productivity of rainfed ecologies.

The Chief Minister said that the dependence on chemicals had to be reduced as use of pesticides apart from causing ecological disturbances had tained the food products. To reduce dependence on chemical fertilizers and agrochemicals he advocated adoption of green manuring. However, availability of seed and reluctance of farmers could be the constraint in this process but it could be solved by providing free seed through the National Seed Corporation.

He said salinity in many states assumed serious proportions, affecting soil fertility: He revealed that the state government had executed a pilot project with the assistance of Dutch Government on two thousand hectares land of farmers. He appealed to the Prime Minister to launch a technological mission for this important matter as reclamation of soil was a costly affair and the farmers would not come forward to make investment on it.

He said that in view of the demand of fruits, vegetables and flowers, thrust had been put on floriculture and horticulture in the state and revealed that a modern fruit and vegetable complex of international standard at Rai near Delhi and a flower auction hall at Gurgaon had been set up.

The Deputy Chairman of the Planning Commission, Prof. Madhu Dandavate, cautioned the agriculture scientists not to sit on the success of the "Green Revolution". Speaking on the concluding day of the seminar, he said the scientists should ensure that the fruits of research must percolate down to the grassroots level. He said due to disparity in the distribution of agriculture inputs, the Green Revolution remained confined to limited areas of the country. Only distributive justice and integrated land reforms could change the situation, he added.

He urged planners and scientists to have correct assessment of ground realities while making plans. He said the Government was giving top priority to agriculture and rural development for eradication of poverty and generation of employment. He said the tragedy of the country was, "man who produces remains hungry".

He further said the profession of agriculture had lost its dignity as educated youth belonging to rural areas were averse to taking up agriculture. He said there was an urgent need not only to restore the viability of the agriculture sector but its dignity too.

Referring to the 9th Five Year Plan, the Deputy Chairman said it would be given a pyramidical shape having a social and human base and economic apex. He said the deliberations at the seminar would provide great insight into the problems of agriculture and focus of the 9th Five Year Plan to meet emerging challenges relating to accelerated growth of agriculture for ensuring food security, employment generation, eradication of poverty and increased share of agriculture exports.

He lauded the achievements made by Haryana and Punjab in the field of agriculture saying that the two states did not only protect our borders at the time of foreign aggression but had also been making significant contribution of foodgrains to the country.

The two-day seminar recommended strengthening of research and extension network in areas of tissue culture, genetic engineering and biotechnology for micropropagation so that conventional approach for food improvement was supplemented. It identified the rice-wheat system as a very potential crop rotation for food security. Hence the maintenance of soil fertility, production technologies of wheat with production potential of 60 quintals per hectare was emphasised.

The seminar focused on perspectives in Indian agriculture through four sessions viz. Emerging Trends in Agri-Technology; Emerging Trends in Animal Husbandry; Natural Resource Man-

M.B.A.
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Selection Basis : Objective-type written Aptitude Test at Kanpur, Agra, Allahabad, Bareilly, Dehradun, Delhi, Gorakhpur, Jaipur, Lucknow & Varanasi on Sunday, March 9, 1997 (test timing 10 a.m. to 12 noon) followed by group discussion and personality interview for qualified candidates at Kanpur, Test Centre may be changed, if adequate number of candidates is not available at any centre.

For NRI/NRI-Sponsored Candidates : No written test, admission based on relative merit on the basis of academic index, group discussion, personality interview and a pre-interview written test of English Language.

Reservation : As per U.P. Govt. Rules.

How to apply : Apply for forms to Coordinator, MBA Admission Test, Institute of Business Management, SSJM Kanpur University, Kanpur - 208024 alongwith a crossed bank draft for Rs. 375/- inclusive of test fees in favour of "**FINANCE OFFICER, SSJM KANPUR UNIVERSITY, KANPUR M.B.A. ADMISSION TEST**" payable at Kanpur with a self-addressed and stamped (Rs. 14/-) envelope of 13"X11".

Last Date for Issue of Forms by Post is : February 10, 1997.
Last Date for Submission of Forms : February 17, 1997.
The University will not be responsible for any postal delay/default.
Note : Canvassing in any form would be a disqualification.

Dr. R.S. Bansal
Registrar

agement and Emerging Trends in Agri-Exports.

Over 150 participating scientists suggested formation of strict laws for maintaining the quality by improved seed agencies. The participants were of the view that there should be strong linkage between the producers and the food processing industries and growers be encouraged to take up the farming of export-oriented cash crops accordingly. Likewise, the formation of councils and cooperatives of marketing and export with *farmers participation at the* grass-root level was suggested. To help the farmers in getting the required agricultural input in time and also to guide them in the use of newer technologies especially for grading, packaging, collection, storage, transportation, popularisation of cooperative models on the pattern of Maharashtra state was also recommended.

Applauding the new technology generated by CCSHAU as also the excellent rapport between the university and State Department of Agriculture, the participants suggested that such rapport be developed by all agricultural universities with their respective State Departments of Agriculture.

The participants were of the view that due to industrialisation and urbanisation, the cultivable land was decreasing at a very fast rate. Hence, it was very imperative that Indian livestock be made competitive with the developed countries and national and regional 'gene banks' be established at the block level.

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Applications are invited from Indian citizens for undermentioned posts so as to reach the undersigned **on or before 31-01-1997** on plain paper along with bio-data, passport size photograph and xerox copies of *certificates of qualification & experience.*

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One post each in Cardiology, Cardiothoracic surgery, Neurology, Neuro surgery, Endrocrinology, Gastroenterology, Anaesthesiology, Radiology & Hospital Administration.

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1. A medical qualification included in the I or II schedule or part II of the third schedule to the Indian Medical Council Act of 1956 (persons possessing qualifications included in part II or third schedule should also fulfil the conditions specified in section 13(3) of the Act).
2. A post graduate qualification recognised by Medical Council of India e.g. M.D./M.S./M.H.A./D.M./M.Ch. or a recognised qualification equivalent thereto in the respective discipline/subject.

Experience : Fourteen years teaching and/or research experience in a recognised institute in the subject of speciality after obtaining the qualifying degree of M.D./M.S./M.H.A. or twelve years after obtaining M.Ch./D.M. or qualification recognised equivalent thereto out of which **4 years** should be as Additional Professor.

Publications : 16 publications in indexed journals (preferably first author) out of which 8 should be original.

Scale of pay : Rs. 5900-200-7300 + NPA

2. ASSISTANT PROFESSOR - Upper age limit — 45 years.

Nephrology - 2, Genito urinary surgery - 1, Microbiology - 1, Radiology - 2, Gastroenterology - 1, Hospital Administration - 1, Neurology - 1.

Qualification : 1 & 2 same as for the post of Professor.

Experience : 3 years experience in teaching/research experience after obtaining the qualifying post-graduate degree in the concerned speciality i.e. M.D./M.S./M.H.A. and one year teaching and/or research experience after D.M./M.Ch. in the concerned speciality.

Publications : 2 publications in indexed journals (preferably first author)

Scale of Pay : Rs. 3500 - 125 - 4500 + NPA

Posts 1 & 2 carry the Pay and Allowances on par with the All India Institute of Medical Sciences, New Delhi in addition to rent free partly furnished accommodation.

NOTE : IN GASTROENTEROLOGY FOR BOTH PROFESSOR & ASST. PROFESSOR POSTS CANDIDATES WITH EITHER D.M. OR M.CH. MAY APPLY.

3. CASUALTY MEDICAL OFFICER - 2 Posts - Upper age limit — 35 years

Qualification :

1. Same as for the posts 1 & 2
2. M.D. (General Medicine) or M.S. (General Surgery) or M.B.B.S. with 3 years experience in Emergency Medicine department of a recognised medical institution.

Scale of Pay : Rs 2500 - 100 - 4000 + NPA (Allowances as per Central Goverment rules applicable to the scale)

Applicants already in employment with Central/State Govt./Autonomous Bodies/Public Sector Undertakings should send their applications through proper channel. However, they may send an advance copy in which case they will have to produce No Objection Certificate before they are interviewed.

The University reserves the right to fill or not to fill up the post/s or to call only suitable candidates for interview.

Candidates called for interview for posts 1 & 2 will be paid single return 1st Class train fare by the shortest route. No TA & DA will be paid to attend the interview for post no. 3.

DIRECTOR

Agronomy, Environment and Food Security

The Vice-Chancellor, Haryana Agricultural University, J.B. Chowdhury, said that the fruits of green revolution had mainly been harvested by rich farmers and stressed that agricultural research should be to develop technology suited to resource constraint conditions. He was inaugurating the XIV national symposium on "Agronomy, environment and food security for 21st century" in Hisar recently. He said that there had been an inevitable mismatching of agricultural development and the needs and potential of individual localities. In India, as of today, the per capita availability of cultivated land was about 0.15 hectare and nearly 58 per cent farmers owned less than a hectare while 76 per cent owned less than 2 hectares of land.

This scenario of distribution of land holdings indicated that majority of the farmers in the country fall under the category of marginal or small farmers with limited resource base.

Dr. Maharaj Singh, former Deputy Director-General, ICAR, who presided, stressed on exploring rainfed areas for meeting the demand of agriculture produce.

Centre for Research in Plant Tissue Culture

A Centre for Research and Application in Plant Tissue Culture is proposed to be set up at a cost of Rs. 5 crores, at the Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar jointly by the Science and Technology Department, Har- yana and the Department of Biotechnology, Government of India.

The proposed Centre would encourage large scale micropropagation of various ornamental, horticultural, vegetable crop and forest tree species. HAU scientists had succeeded in producing miniature plant material in the laboratory through tissue culture and perfected its propagation technique. They had produced potato tubers of 3-5 mm diameter, gladiolus cormels of 3-9 mm diameter and a large number of sugarcane plants.

This success has been achieved by a team of scientists comprising Dr. V.K. Chowdary, Dr. R.K. Jain, Dr. R.C. Yadav and Dr. Neelam R. Yadav under the leadership of a renowned cytogeneticist and the Vice Chancellor, Prof. J.B. Chowdhary.

The micropropagation system was much efficient and cost effective as compared to conventional method where seed multiplication rate was very slow and costly. Also plants true-to-type could be produced with this technique. Significant progress in tissue culture and micropropagation had also been attained in other economically important plants which included horticultural plants like female datepalm, grapes and chrysanthemum, field and vegetable crops like Indian mustard, rice, chick-pea, brinjal and tomato; and Sheesham and Khejri among forest trees. Work to produce salt tolerant plants of rice and Indian mustard through tissue culture was also underway.

The Rockfeller Foundation of United States, Department of Biotechnology, Government of India, Indian Council of Agricultural Research (ICAR), and State agencies had provided financial assistance to carry out these studies.

The microbiologists at the university had succeeded in tracing out some strains of a bacterium, Azotobacter that were capable of solubilising existing phosphate in the soil into available form of the plants. This would cut short the use of phosphatic fertilisers and add more to the profit of farmers.

News from UGC

Countrywide Classroom Programme

Between 24th and 31st January, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

25.1.97

"Understanding Solar Activity - 1"

"Total Quality Management"

"Bonsai : The Green Dwarfs-1"

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"Short Films : A German View"

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"Question Time "

"Rabies : Containment and Prevention"

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"Earthquake Prediction and Animal Behaviour"

"Well Jumped Women"

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1.00 p.m. to 2.00 p.m.

24.1.97

"Metal Casting"

"Hypertension"

"Algebric Structure - IV : Boolean Algebra"

25.1.97

"Understanding Cinema - II : Scene and Shot"

"Family Series : Working Together to Create Contentment-1 (Japan)"

26.1.97

No Telecast

27.1.97

"Inflation : What is it all about"

"Classical Mechanics - VIII : Minimal Principles"

"Clouds : Form of Condensation"

28.1.97

"Silver Magic - 1"

"Innovation in Teacher Education"

"Anaemia"

29.1.97

"Extending Edges of Technology"

"Iron Metabolism Quest for Primitive Vascular"

"Plants Part-1"

30.1.97

"Introduction to Social Anthropology Part - II"

"Iron ore : Occurance and Mining"

"Accountability in Higher Education"

31.1.97

"Special Programme on Comet Hale-Bopp"

"Dissection of some Triangle"

"Dying Dal Lake"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

24.1.97

"योग द्वारा स्वास्थय लाभ - IV"

"खजूर का तेल"

27.1.97

"राग संगीत - II"

29.1.97

"आर्ट आफ स्कीन प्रिंटिंग"

31.1.97

"योग द्वारा स्वास्थय लाभ - V"

"अजंता की गुफायें"

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Writing from the Periphery

P.A. Abraham*

Ranjana Harish. *The Female Footprints*. **New Delhi, Sterling Publishers, 1996. Pp. 110. Rs. 250/-.**

A line from Virginia Woolf's *To the Lighthouse* reads like this : "Mr. Ramsay, stumbling along a passage one morning .stretched his arms out, but Mrs Ramsay having died suddenly the night before, his arms though stretched out, remained empty." Although it is Mrs. Ramsay, who 'does the dying', the subject of the sentence is nevertheless her husband, and that Mrs. Ramsay exists only in a subordinate clause, the object of his need.

Woolf, probably the first 'feminist' writer, is read here through the spectacles of Simone de Beauvoir, who argues that women are caught up in a sort of social syntax in which they are never the subject but always the 'Other'

Ranjana Harish's book *Female Footprints*' a sequel to her earlier book captioned *Indian Women's Autobiographies* also depicts the perennial themes found in women's writings like marginality, alienation, exploitation, supremacy of male culture exploration and survival, crossing boundaries, challenging limits and glimpsing new prospects. They try to fight their way out of silence to project more authentic images of how women feel and what they do. Their life stories are told from the women's angle registering a feminized awareness of dislocation within the very literary tradition in which they are writing.

Ranjana's earlier book, a pioneering work in this area, which I had the opportunity to review in this column dealt with 23 women who chose to write their autobiographies in English. The present book is about six Indian women autobiographers who chose to write in their respective regional languages which according to Ranjana, seems to be more authentic, 'close to the experience of Indian soil'. Interestingly, all the six autobiographers included in the book wrote their life stories around the age of fifty, an ideal age for anyone to look back into the past and pour out their bygone experiences which indeed have a therapeutic effect.

The present book under review has been divided into six chapters which include excerpts from the respective writers.

In the first chapter, "Transgressing the Feminine Culture ", Ranjana focuses on Ramabai Ranade's autobiography, originally written in Marathi under the title *Amchya Ayushatil Kahi Athavani* and translated by Kusumvati Deshpande under the caption, *Ranade : His wife's Reminiscences*, which brings to the reader a depiction of the 'Indian feminine subculture before a century'. Hailing from a traditional Hindu family, Ramabai grew up in the midst of traditional values and patriarchal discriminations against women. But, luckily, her husband, an enlightened person was always a source of inspiration for her in weal and woe. Even her two brothers-in-law were a constant support for Ramabai. Ironically, it is the women themselves who are to a great extent the cause of women's oppression, as is evident in the case of Ramabai, where the senior women in the family harassed the young wife, always looking at her with suspicion and jealousy. (Isn't it true in this post modern era too where many Indian women are oppressed more by their mothers and sisters-in-law ?). Ramabai's selfless devotion to her husband, who was her constant companion, is admirable specially under the given circumstances in which she survived. To my mind it is not a 'feminine weakness', but a sign of female strength, energy, and nurturance of a woman that keeps men also going.

The second chapter Power and Passivity, is about the autobiography of Nawab Sultan Jahan Begam, the ruler of Bhopal, who wrote her autobiography in Urdu at the age of fifty. The matriarchal dynasty of the state in those days itself shows the important position held by women in India even years ago. Ranjana points out that Begam's book is more of a historical document during the period of her mother's rule of Bhopal from 1860 to 1901. "The focal point of the book is not her private life." Nevertheless it is interesting to note that the Begam, while observing the *purdha* tradition, mixed readily and with ease with the Britishers, felt free to be photographed barefaced with her male ministers, and shook hands with males when she was out of Bhopal. Could we say women's emancipation first began in India years before the West started thinking about it ?

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In the third chapter 'Refusal to Despair' the autobiography of Parvatibai Athavale who became a widow at the prime age of 20 is discussed. It was under the encouragement and inspiration of Maharishi Karve the renowned social reformer, that Parvatibai could come out of the seclusion that society forced on widows in those days. About one third of her autobiography entitled *My Story. The Autobiography of an Indian Widow* deals with her American experiences, the hurdles that she had to cross over through sheer courage and determination.

The next chapter "Following After" is about the autobiography of Lakshmibai Tilak titled *I Follow After* (Ranjana, here, does not mention the original title of the autobiography in the regional language and the name of the translator.) Like Ramabai, Lakshmibai was also totally devoted to her husband and his lofty ideals which ultimately made her give up all her Hindu relatives and with her husband's constant guidance and inspiration, she entered public life and made a mark. Ranjana remarks," Like the autobiography of Ramabai Ranade, Lakshmibai Tilak's autobiography also projects the self effacing image of the autobiographer..... Her ideal of marital bliss is a complete unification. In this she provides a good illustration of the typical *Pativrata* Indian wife, for whom life is not a quest for a path of her own but following in the footsteps of her husband." But it is important to note that it is by conviction and not by compulsion that they decided to follow the footsteps of their husbands.

The last two chapters of the book deal with two post 1960 women's autobiographies—Amrita Pritam's autobiography translated from the original *Rasidi Tikit* by Krishna Gorowara under the caption *The Revenue Stamp* and Indira Goswami's *An Unfinished Autobiography* translated by P. Kotoky. (Here again, the original title in the regional language is missing.)

Both Amrita Pritam and Indira Goswami belong to the feminist era and their autobiographies express their personal and 'bodily' experiences vividly. Both tried to defy traditions and customs in order to get liberated and they emerged as winners.

One of the common traits of all these six Indian women autobiographers [except perhaps of Nawab Sultan Jahan Begam's]' is that behind each narrator's life there is/are a man/men who supported them in their moments of crisis. All these men are depicted as a great source of inspiration for these women—in the case of Ramabai, Justice Ranade and her two brothers-in-law, for Parvatibai, Maharishi Karve, in the case of Lakshmibai, her loving and inspiring husband, in the case of Amrita Pritam, it was her father and the inspiring male figure Sahir, 'and for Indira Goswami, her father, her husband and above all, her Professor, Lekharu.

Women's writings in general and women's autobiographies in particular project a 'group consciousness' even when these writers try to portray individual lives. Writing their autobiographies is part of their struggle to find their own voices through which to challenge traditions which have marginalized and excluded them from the mainstream. The autobiographies discussed in the book are all written out of a conviction of the worth of women and the necessity for women to be critically conscious of their own roles in conventional social structures. They are depictions of courage and convictions — female footprints, which are never blurred in the passage of time. As Shashi Deshpande wrote in her Foreword for the book, "And looking back through such works we see lives of courage and conviction—we can place these footprints where they rightfully belong — as part of the long endless trail of human footprints".

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Akojam, Swaranlata Devi. **Agricultural information system in Manipur : A study.** Manipur. Dr R Lahiri, Asstt Prof, Department of Library and Information Science, Manipur University, Imphal.

2. Shanmugam, S P. **The development patterns of Tamil periodicals with special reference to the consumer periodicals : A descriptive study in historical perspectives.** Bharathidasan. Dr S Nakkiran, Department of Cooperation, TBML College, Porayar and Dr R Paul Mohan Roy, University Librarian (Retd), Madurai Kamaraj University, Madurai.

3. Thoidingjam, Purnima Devi. **Citation analysis of the Ph D Theses in Social Sciences accepted by Gauhati University during 1970-1980.** Manipur. Dr R Lahiri, Asstt Prof, Department of Library and Information Science, Manipur University, Imphal and Dr S L Sangam, Reader, Department of Library and Information Science, Karnatak University, Dharwad.

Psychology

1. Chauhan, Shivani. **The impact of academic achievement and intelligence on adjustment of male and female graduates students.** Rohilkhand. Dr Sarojini Shrivastava, G D H G College, Moradabad.

2. Gupta, Dipti. **Vibhinn prakar ke madhyamik vidyalayon mein adhyayanrat dasvin kaksha ke vidyarthiyon kee awashyaktayon, mulyon evam buddhi per baudhik uddipan ke prabhav ka adhyayan.** Rohilkhand. Dr R K Ojha, K G K College, Moradabad.

3. Mehta, Roma Hemendra. **An experimental study to analyse the differential impact of therapeutic intervention strategies on some disruptive behaviour disorders.** Baroda.

4. Pachori, Manju Lata. **A psychological study of family adjustment in relation of self-disclosure among the educated females of Rohilkhand Region of Uttar Pradesh.** Rohilkhand. Dr P N Arora, Govt College, Ramnagar.

5. Sahariya, Rama. **The worker alienation in industry.** Rohilkhand. Dr P N Mehrotra, K G K College, Moradabad.

6. Singh, Awadh Kishore. **A study of caste stereotypes of males and females of Vaishali District.** Bihar. Dr K K P Roy, Reader, Department of Psychology, B R Ambedkar Bihar University, Muzaffarpur.

7. Yadav, Prabhash Chandra. **A study of job-satisfaction among factory and office workers in relation to some personal and personality factors.** Bihar. Late Dr Shukladeo Prasad Singh.

Sociology

1. Arvind Kumar. **Role analysis of folk medicine men in rural health with special reference to Western U P.** Rohilkhand. Dr (Smt) Shashi Prabha Jain, Hindu College, Moradabad.

2. Bharati, Urmila. **Muslim mahilayon kee badalti pristhiti ka samajshastriya vishleshan : Moradabad Mandal ke vishesh sandarbh mein.** Rohilkhand. Dr (Smt) Sashi Prabha Jain, Hindu College, Moradabad.

3. Chattopadhyay, Sonali. **Impact of television on urban working women : A comparative study of Delhi and New York.** JNU. Dr C S Raj, Asstt Prof, Centre for American and West European Studies, Jawaharlal Nehru University, New Delhi.

4. Chouhan, Karan Singh. **Pashchimi Uttar Pradesh mein ubharta krishakandolan : Ek samaj shastriya adhyayan.** Rohilkhand. Dr Bharat Agrawal, J S Hindu College, Amroha.

5. Das, Kapil Prasad. **Doctor-Vaigyanikon kee vyavasayik pratibadhata ka samajshastriya adhyayan : Pashu Anusandhan Sansthan Bareilly ke doctoron per adharit.** Rohilkhand. Dr M C Sondhi, Bareilly College, Bareilly.

6. Goyal, Anuradha. **Chikitsa vyavasaya ka samajik adhyayan evam mulyankan : Bareilly tatha Rampur Nagar ke alopathic chikitsakon ke adhyayan per adharit.** Rohilkhand. Dr J L Shah, Bareilly College, Bareilly.

7. Jha, Amarendra. **Cultural impact of satellite foreign TV : A comparative study of rural and urban social settings in Delhi.** JNU. Dr Anand Kumar, Assoc Prof, Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi.

8. Mahesh Chandra. **Gandhi ka samajik darshan.** Rohilkhand. Dr J L Shah, Bareilly College, Bareilly.

9. Musarrajzaidi. **Muslim istriyon mein parampara evam adhunikikaran : Rampur Janpad kee Muslim istriyon mein parampara evam parivartan ka samajshastriya adhyayan.** Rohilkhand. Dr A K Gour, Govt Raza P G College, Rampur.

10. Rafat, Jakiya. **Muslim mahilayon kee sthiti : Nirantarta evam parivartan, Bijnor Nagar ke sandarbh mein.** Rohilkhand. Dr O P Garg, Vardhaman College, Bijnor.

11. Rastogi, Munish. **Krishi mein mahila shramik,ek samajsastriya adhyayan : Uttar Pradesh ke Bijnor Janpad per adharit.** Rohilkhand. Dr J S Rathor, Gulab Singh Hindu College, Chandpursiyau, Bijnor.

12. Siria, Sushil. **Sports College, Lucknow evam Rohilkhand Vishwavidyalaya ke khilariyon ka samajshastriya adhyayan.** Rohilkhand. Dr M C Sondhi, Bareilly College, Bareilly.

Social Work

1. Murugaiah, K. **A study on the QOL of urban women domestic helpers.** Padmavati.

Political Science

1. Anwar Alam. **Role of religion in state polity : A comparative analysis of contemporary Egypt, Iran and Saudi Arabia.** JNU. Prof K R Singh, Centre for West Asian and African Studies, Jawaharlal Nehru University, New Delhi.

2. Asthana, Pratima. **Kshetravad : Bharitiya rajniti ke paripekshya mein ek alochnatmak adhyayan, 1950-1990.** Rohilkhand. Dr H Swaroop, N M S N Dass College, Badaun.

3. Ayodhya Prasad. **Uttar Pradesh Vidhan Sabha mein vipaksha kee bhoomika, 1977 se 1979 tak.** Rohilkhand. Dr G C Koshal, S M College, Chandausi.

4. Gupta, Sunil Kumar. **Uttar Pradesh mein shiksha prashasan ka alochnatmak adhyayan : Vishesh roop se Moradabad Mandal ke sandarbh mein.** Rohilkhand. Dr H Swaroop, N M S N Dass College, Badaun.

5. Hema, B R. **Education and political development among rural women in Karnataka.** Bangalore. Dr M G Krishnan, Director, Centre for Adult, Continuing Education and Extension, Bangalore University, Bangalore.

6. Joshi, Kusum. **Swatantrata ke pashchat Uttar Pradesh kee rajniti mein krishkon kee bhoomika : Ek vishleshnatmak adhyayan.** Rohilkhand. Dr S P Sagar, K G K College, Moradabad.

7. Mani, Jacob. **Traditional fishermen community in Kerala : A study on the problems of marginalisation.** Kerala.

8. Manju. **Modernisation of political institutions in Nepal.** HP.

9. Mehrotra, Manisha. **Swatantrata andolan mein Janpad**

Shahjahanpur ka yogdan. Rohilkhand. Dr Roop Singh, R S M College, Dhampur.

10. Mishra, Shabnam. **A study of Indira Gandhi's socialism.** Bihar. Dr R Pandey, Prof and Head, Department of Political Science, B R Ambedkar Bihar University, Muzaffarpur.

11. Mohammad Sayeed Alam. **Conflict and cooperation in the Persian Gulf since 1973.** AMU, Prof Akhtar Majeed.

12. Nageshwar, K. **The socio-political foundations of the press.** Osmania. Dr F D Vakil, Department of Political Science, Osmania University, Hyderabad.

13. Pandey, Mahendra Prasad. **Madhya Pradesh mein Deen Dayal antyodaya karyakram ka vishleshnatmak adhyayan : Durg Jile ke vishesh sandarbh mein.** Ravishankar. Dr Som Nath Dwivedi, Prof, Department of Political Science, Kalyan College, Bhilai Nagar, District Durg.

14. Roy, Arundhati. **The working of the Indo-Soviet Treaty, 1971-1986.** JNU. Dr (Mrs) Nancy Jetly, Assoc Prof, Centre for South, Central South-East Asian and South-West Pacific Studies, Jawaharlal Nehru University, New Delhi.

15. Sharma, Trilok Chand. **General elections in Himachal Pradesh : A study in political development.** HP.

16. Sharma, Vijay Kumari. **The role of school in political socialization : A case study of the high and secondary schools in Shimla Town, HP.**

17. Singh, Devendra Pal. **Uttar Pradesh Police Vibhag ke karyon ka alochnatmak adhyayan : Vishesh roop se Bareilly parikshetra ke sandarbh mein.** Rohilkhand. Dr H Swaroop, N M S N Dass College, Badaun.

18. Singh, Laishram Rajen. **China in the Asia Pacific Region, 1979-1989.** JNU. Dr (Mrs) Madhu Bhalla, Centre for East Asian Studies, Jawaharlal Nehru University, New Delhi.

19. Singh, Sujata. **Veer Vinayak Damodar Savarkar kee rajnitik bhoomika evam chintan : Ek adhyayan.** Rohilkhand. Dr Roop Singh, R S M College, Dhampur.

Economics

1. Bharathy, Vireshwary. **Wage rigidity, dualism and underemployment in poor countries : A theoretical study.** JNU. Prof Ashok Guha, Head, Centre for Studies in Diplomacy, International Law and Economics, Jawaharlal Nehru University, New Delhi.

2. Bhondarkar, Vijaykumar Govindrao. **Study of socio-economic changes among the tribals in Kinwat Taluka of Nanded District.** Marathwada Agrl. Dr B W Ashturkar, Head (Retd), Department of Economics and Statistics, Marathwada Agricultural University, Parbhani.

3. Bose, D Chandra. **Inventory management in public sector electrical industry in Kerala.** CUST. Dr K C Sankaranarayanan, Head, Department of Applied Economics, Cochin University of Science and Technology, Kochi.

4. Charat Singh. **Advances in agricultural technology and their impact on poverty and unemployment in the Western Region of U P with special reference to District Bijnor.** Rohilkhand. Dr S K Rajput, R S M College, Dhoml, Bijnor.

5. Dhananjay Sharan. **Rampur Janpad mein vrihat udyogon ka ayojan evam vikas.** Rohilkhand. Dr P S Saxena, Department of Economics, Hindu College, Moradabad.

6. Dhariwal, Minakshi. **Powerloom industry in West Madhya Pradesh.** Devi Ahilya. Dr (Smt) Nirupama Nagar, Department of Economics, P M B Gujarati Arts and Law College, Indore.

7. Diwan, Arun. **Income and employment of labours in urban informal sector : A case study of trade sector in Raipur City.** Ravishankar. Dr Suresh Khare, Prof and Head, Department of Economics, Government P G College, Jagdalpur.

8. Dubey, Meenakshi. **Dakshin-Pashchim Madhya Pradesh mein audyogikaran ka janjatiya jeewan evam arthvyavastha per prabhav : Vishesh roop se udyogon mein karya karne wale shramikon per.** Devi Ahilya. Dr V D Nagar, Nathkripa, South Tukoganj, Indore.

9. Elizabeth, M P. **Interstate variations of investment in the manufacturing public enterprises under Government of India.** CUST. Dr N Chandrasekharan Pillai, Prof, School of Management Studies, Cochin University of Science and Technology, Kochi.

10. Gaur, Prabash Chandra. **Uttar Pradesh Rajya Vidyut Parishad ke karyakramon ka vishleshnatmak adhyayan.** Rohilkhand. Dr R S Kaushik, R S M College, Dhampur.

11. Gowda, N K. **Impact of minor irrigation on small and marginal farmers in Karnataka.** Karnatak. Prof M C Kodli, Prof (Retd), Department of Economics, Karnatak University, Dharwad.

12. Hegde, Venkatachala G. **Developing countries and the evolving regime of Intellectual Property Rights.** JNU. Dr B S Chimni, Assoc Prof, Centre for Studies in Diplomacy, International Law and Economics, Jawaharlal Nehru University, New Delhi.

13. Joseph, Jose K. **Economics of justice in Kerala.** CUST. Dr P Sudarsanan Pillai, Department of Applied Economics, Cochin University of Science and Technology, Kochi.

14. Lizzy, E A. **Consumer protection with special reference to the role of women in Kerala.** CUST. Dr Jose T Payyappilly, Prof, School of Management Studies, Cochin University of Science and Technology, Kochi.

15. Manikandan, K. **Family resources composition, efficiency and exploitation of tenants : A study of four Tamil Nadu villages.** Andhra.

16. Mathur, Archana Saharya. **Imparct of FERA : A comparative study of transnational corporations and Indian firms in the transport and electrical equipment industries.** JNU. Prof Manmohan Aggarwal, Assoc Prof, Centre for Studies in Diplomacy, International Law and Economics, Jawaharlal Nehru University, New Delhi.

17. Metta, Usha Rani. **Socio-economic conditions and production activities of prisoners : A case study of Central Prison, Warangal.** Kakatiya. Prof B Shyamala Devi Rathore, Department of Economics, Kakatiya University, Warangal.

18. Michael, T T. **A study on the economic impacts of dairy co-operatives in Idukki District.** CUST. Dr R Ramakrishnan Korakandy, Reader, School of Industrial Fisheries, Cochin University of Science and Technology, Kochi.

19. Mishra, Ramesh Kumar. **Chhattisgarh mein bahuddeshiya nadi ghati pariyojanayon ka krishi vikas mein yogdan : Uplabdhiyon evam sambhavnayon ka adhyayan.** Ravishankar. Dr B K Mehta, Asstt Director, Adult Education, Pt Ravishankar Shukla University, Raipur.

20. Mundara, Purshottam. **Madhya Pradesh mein anusoochit jati evam jan jatiyon ke liye chalai ja rahi arthik kalyan yojanayon ka mulyankan : Jhabua Jile ke vishesh sandarbh mein.** Devi Ahilya. Dr (Smt) Anusuya Desai, 567, M G Road, Indore.

21. Narendra Kumar. **Trade and economic relations of the SAARC countries.** Rohilkhand. Dr R M Dubey, Hindu College, Moradabad.

22. Purushotham, E. **Evaluation of Jawahar Rozgar Yojana Programme : A case study of Nalgonda District in Andhra Pradesh.** Osmania. Dr A Muralidhar Rao, Reader, Department of Economics, Osmania University, Hyderabad.

23. Pushpa Devi. **Bhoomi Vikas Bank ka harit kranti evam shwet kranti mein yogdan : Moradabad mandal ke sandarbh mein.** Rohilkhand. Dr Arun Shinghal, S M College, Chandausi.

24. Rekha Rani. **An analytical and critical study of hotel**

and tourism industry of Bareilly Division : Its present position, problems and prospects. Rohilkhand. Dr M P Goswami, Bareilly College, Bareilly.

25. Rohitash Singh. **A critical study of plan strategy to alleviate the rural poverty in Western U P with special reference to Moradabad Division.** Rohilkhand. Dr R S Kaushik, R S M College, Dhampur.

26. Sateesh Reddy, K. **Performance of anti-poverty programmes : A case study of the scheme for providing self-employment to educated unemployed youth in Andhra Pradesh.** Osmania. Prof B Satyanarayan, Department of Economics, Osmania University, Hyderabad.

27. Sharma, Renu. **Trends of public expenditure in U P since 1971.** Rohilkhand. Dr K C Arya, Hindu College, Moradabad.

28. Singh, Yog Raj. **Caustic soda industry in India : Prospects for future growth.** Roorkee.

29. Varshney, Ashok Kumar. **A study of financial institutions in India with particular reference to State Industrial Devlopment Corporations.** Rohilkhand. Dr K C Arya, Hindu College, Moradabad.

30. Virendra Kumar. **Problem of long term agricultural credit : A case study of Badaun District.** Rohilkhand. Dr K C Arya, Hindu College, Moradabad.

31. Yadava, Gagan Deo Prasad. **A study of commercial bank financing of agriculture in the District of West Champaran, Bihar.** Bihar. Dr Rajendra Pandey, Head, Department of Economics, M S College, Motihari, East Champaran.

Law

1. Anand, Deepak. **Legal regulation of multinational corporations in India : A study of the Indian practice vis-a-vis international legal norms.** Rohilkhand. Prof P S Sehgal, Head and Dean (Retd), Department of Law, University of Delhi, Delhi.

2. Chhabra, Promila. **Hindu undivided family in India tax structure : A critical study.** Dayanand Rohtak. Dr L C Dhingra.

3. Dalal, Arvinder Singh. **Damages for the Breach of Contracts : A study of judicial trends in India, England and the United States of America.** Dayanand Rohtak. Dr L C Dhingra.

4. Dwivedi, Bipin Kumar. **Legal controls of industrial disasters.** JNU. Prof Rahmatullah Khan, Centre for Studies in Diplomacy, International Law and Economics, Jawaharlal Nehru University, New Delhi.

5. John, Annie. **Educational rights of the minorities under Article 30 of the Indian Constitution.** CUST. Dr V D Sebastian, Prof (Retd), School of Legal Studies, Cochin University of Science and Technology, Kochi.

6. Radhakrishnan Nair, K. **Settlement of motor accidents claims with special reference to Kerala.** CUST. Dr V D Sebastian, Prof (Retd), Department of Law, Cochin University of Science and Technology, Kochi.

7. Rajgopal, P. **Evolution of federal finances in India : Constitutional perspectives.** Andhra,

8. Shahabuddin. **Social security laws and quarry workers in Haryana State : An empirical study.** Dayanand Rohtak. Dr P C Juneja.

9. Vijaya Laxmi, B. **Limits of national resource jurisdiction in the Law of Sea.** Kakatiya. Prof V Nageswara Rao, Department of Law, Osmania University, Hyderabad.

Public Administration

1. Sarma, G Sivarama. **Training of state police personnel in Andhra Pradesh.** Osmania. Prof S P Ranga Rao, Prof (Retd), Department of Public Administration, Osmania University, Hyderabad.

2. Sen, Kalpna. **Relationship between politicians and administrators at district level in Himachal Pradesh with special reference to Shimla and Mandi districts.** HP.

Military Studies

1. Pandey, Harnarain. **Bharat kee suraksha aur Nepal.** Rohilkhand. Dr Diwaker Upadhyaya, Bareilly College, Bareilly.

2. Tewari, Satya Dev. **Dakshin Asia mein shanti kee samasya aur mahashaktiyon kee bhoomika, san 1980 se 1990 tak.** Rohilkhand. Dr Diwaker Upadhyaya, Bareilly College, Bareilly.

Education

1. Abdul Gafoor, P K. **A critical study of the functioning and the work efficiency of the district institutes of education and training.** Calicut. Dr Ayishabi T C, Reader, Department of Education, University of Calicut, Calicut.

2. Agarwal, Rashmi. **A comparative study of conceptual understanding by programmed instruction and Computer Assisted Instruction.** Rohilkhand. Dr Beena Shah, Prof, Head and Dean, Faculty of Education, Rohilkhand University, Bareilly.

3. Agarwal, Rupa. **A cross cultural study of family adjustment and risk taking behaviour in relation to divergent thinking of female adolescents.** Rohilkhand. Dr Girijesh Kumar, Hindu College, Moradabad.

4. Anjani, J. **A critical study of children's story literature in Telugu language : A trend analysis.** Osmania. Prof R Venkateshwar Rao, Department of Education, Osmania University, Hyderabad.

5. Anzar Husain. **A comparative study of contain educational commissions and national policies in education, with special emphasis on Board of Secondary Education in U P.** Rohilkhand. Dr R P Gupta, Hindu College, Moradabad.

6. Arora, Asha. **A study of risk-taking tendency and self disclosure in relation to divergent thinking of scheduled caste adolescents.** Rohilkhand. Dr Grijesh Kumar, Hindu College, Moradabad.

7. Balakrishnaveni, D. **Role conflicts of women teachers in V O C districts.** Alagappa,

8. Baskaran, S Herbert. **Developing a remedial instructional package to reduce the errors in sentence structure committed by the students in written English at the higher secondary level.** Alagappa,

9. Chandraleka, R. **Effectiveness of learning population education concepts through intervention strategies.** Avinashilingam. Dr G Thilakam.

10. Devindra. **Socialisation and education of the children of some Nomadic communities in Delhi State.** Jamia. Prof S P Ruhela, Department of Teacher Training and Non-Formal Education, Jamia Millia Islamia, New Delhi.

11. Kaushik, Kamlesh. **Determinents of curricular choices of syllabus oriented and syllabus transcend students of Class XI of Moradabad District.** Rohilkhand. Dr Girjesh Kumar, Hindu College, Moradabad.

12. Malini, P M. **A study of gender differences in certain psychological variables of the Mathematical domain secondary school level.** Calicut. Dr V Sumangala, Reader, Department of Education, University of Calicut, Calicut.

13. Mattoo, Sushma. **Maturational and socialization aspects of dependency behaviour and its influence on the personality of pre adolescents and adolescents.** Jammu. Dr Kiran Sumbli, Reader, Department of Education, University of Jammu, Jammu.

14. Meera, S. **An evaluation of the total internal assessment system, in the Avinashilingam Deemed University.** Avinashilingam. Dr (Smt) M Chandramani.

15. Mohd Zahid. **Cost of Education and academic performance in senior secondary schools of Delhi.** Jamia. Prof Riaz Shakir Khan, Department of Teacher Training and Non-Formal Education, Jamia Millia Islamia, New Delhi and Dr Furqan

Qamar, Department of Commerce, Jamia Millia Islamia, New Delhi.

16. Narayana Reddy, Ch. **A critical study of development of adult education in Andhra Pradesh during the post independence period.** Osmania. Prof R Venkateshwar Rao, Department of Education, Osmania University, Hyderabad.

17. Nasrin. **Development of post literacy material of environmental education for new-literates through programmed text.** AMU. Prof Mohammad Sharif Khan.

18. Nisha Rani. **Gandhi evam Vinoba Jee ke shiksha sambandhi vicharon ka rashtriya shiksha neeti, 1986 ke sandarbh mein tulnatmak adhyayan.** Rohilkhand. Dr R P Gupta, Hindu College, Moradabad.

19. Patel, Bhagabhai S. **Opinions of students of higher secondary schools of Saurashtra regarding teaching behaviour of their teachers.** Saurashtra. Dr M M Patel.

20. Radhakrishna Murty, C. **A comparative study of implementation of National Adult Education Programme by Government and voluntary agencies in Srikakulam District of Andhra Pradesh.** Andhra,

21. Ram, Kamini Kajal. **Psycho social correlates of linguistic creavity.** Utkal.

22. Ram, Sipra. **A study of home environment, need-structure and values of creative low achievers and creative high achievers at high school level.** Rohilkhand. Dr Girijesh Kumar, Hindu College, Moradabad.

23. Rameshwar Dayal. **A study of addition strategies adopted by children of grades one and two at different levels of number concept maturation.** Jamia. Dr (Ms) P Kaul, Department of Teacher Training and Non-Formal Education, Jamia Millia Islamia, New Delhi.

24. Roy, Rita. **Preparation, try out and study of effectiveness of a psychological education programme on high school students based on William Glasser's Reality Therapy.** Baroda.

25. Saxena, Madhuri. **A comparative study of the Ancient Indian Education and its relevance in the present context.** Rohilkhand. Dr R N Saxena, Hindu College, Moradabad.

26. Sowbhagya Lakshmi, C **Developing of writing skills among students of class VIII : Learning Telugu as a second language through communicative approach.** Osmania. Dr R Venkateshwar Rao, Department of Education, Osmania University, Hyderabad.

27. Sudarkkodi, S. **Development of a multimedia instructional system for remedial measures in written English.** Alagappa,

Commerce

1. Agarwal, Suresh Chandra. **Uttar Pradesh Vitt Nigam kee vittiya sanrachna ka vishleshan.** Rohilkhand. Dr N L Sharma, Bareilly College, Bareilly.

2. Agrawal, Madhulika. **Raipur Sambhag mein laghu udyogon kee sanrachnatmak sthiti, pragati evam samasyaen.** **Ravishankar.** Dr D B Agrawal, Prof and Head, Department of Commerce, R C S Arts and Commerce College, Durg.

3. Athma, Prasantha. **Performance of public sector commercial banks : A case study of State Bank of Hyderabad.** Osmania. Prof D Obul Reddy, Department of Commerce, Osmania University, Hyderabad.

4. Awasthi, Kamlesh Babu. **Grameen kshetra ke arthik vikas mein kshetriya grameen bankon ka yogdan : Janpad Shahjahanpur ke sandarbh mein.** Rohilkhand. Dr S P Gupta, Bareilly College, Bareilly.

5. Bhanwal, Jitender Kumar. **Problems and prospects of India's export marketing of major agricultural commodities.** HP.

6. Bhat, Subraya Nandikeshwar. **Problems and prospects of brick kiln industry in Hubli-Dharwad talukas in Karnataka.** Karnatak. Dr K S Daniel, Prof and Chairman, Department of Commerce, Karnatak University, Dharwad.

7. Gabriel, Simon Thattil. **A study on the state of art of human resources management in the industrial sector of Kerala.** Calicut. Dr T Govindankutty Nair, Prof, Department of Commerce and Management Studies, University of Calicut, Calicut.

8. Ghadge, Namdeo Yashwantrao. **The financial administration in Municipalities in Maharashtra State.** Marathwada. Dr S A Somwanshi, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

9. Gupta, Niranjan Lal. **Job satisfaction in banking industry.** Rohilkhand. Dr N L Sharma, Bareilly College, Bareilly.

10. Janardan Prasad. **Punjab National Bank as a lead bank in Meerut Commissionary : A study since 1985.** Rohilkhand. Dr S C Jain, Vardhaman College, Bijnor.

11. Karandikar, Amarja. **Assessment of effects of advertising on consumers in India and measures of protection.** SNDT. Dr G B Nagporewalla, Department of Commerce, Shreemati Nathibai Damodar Thackersey Women's University, Mumbai.

12. Khan, Aqeel Ahmad. **Role of major travel agencies in the promotion of tourism in India.** AMU, Prof A Farooq Khan, Department of Commerce, Aligarh Muslim University, Aligarh.

13. Khan, Tanwir Ahmad. **Performance appraisal of executives in Steel Authority of India Limited, with special reference to the steel plants working in Bihar.** Bihar. Dr Amod Prasad, Prof, Department of Commerce, R D S College, Muzaffarpur.

14. Manoj Kumar. **Nigamit kshetra mein Bharatiya vittiya sansthayon dwara pravartit prodyogiki unnyayan ka swaroop.** Rohilkhand. Dr H L Sharma, Bareilly College, Bareilly.

15. Md Alauddin. **Privatization in Bangladesh : Issues, strategies and possibilities.** AMU, Dr Abdul Qayyum Khan, Lecturer, Department of Commerce, Aligarh Muslim University, Aligarh.

16. Modi, Paraskumar. **Indore nagar ke jhuggi vasion ka arthik evam samajik adhyayan.** Devi Ahilya. Dr Kamlesh Bhandari, Department of Commerce, P M B Gujarati Commerce College, Indore.

17. Mukesh Kumar. **The role of ooperative and land development banks in agricultural finance with special reference to Rampur District.** Rohilkhand. Dr Arun Singhal, Department of Economics, S M College, Chandausi.

18. Pakkeerappa, Gari Pakkeerappa. **Performance appraisal of employees : A study of selected public enterprises in Karnataka.** Karnatak. Dr K S Daniel, Prof and Chairman, Department of Commerce, Karnatak University, Dharwad.

19. Parmar, Sanjeev. **A comparative study of management and operations of State Financial Corporations of Himachal Pradesh and Haryana.** HP.

20. Pilania, Alok. **Debt management in India's private sector corporate enterprises : A case study of paper industry.** Vinoba. Dr J K Prasad, J J College, Jhumritelaiya.

21. Raina, Anita. **Doordarshan advertising and consumer behaviour.** Jammu. Dr Keshav Sharma, Lecturer, Department of Commerce, University of Jammu, Jammu.

22. Rajput, Ashok Kumar. **Uttar Pradesh mein gramya vikas yojanayon ka prabandh : Bijnor Janpad ke antargat vikas**

khandon per adharit ek adhyayan. Rohilkhand. Dr Arvind Kumar Shrivastava, Sahu Jain College, Najibabad.

23. Shailendra Kumar. **A study of India's trade relation with the U S A during 1980-90.** Roorkee.

24. Sharma, Anuradha. **Management of public distribution system in Jammu Region.** Jammu. Dr Keshav Sharma, Lecturer, Department of Commerce, University of Jammu, Jammu.

25. Sharma, Ratan Singh. **Regional unbalanced growth of agricultural productivity in Madhya Pradesh : An analytical study.** Durgavati. Dr V K Basal, G S College of Commerce and Economics, Civil Lines, Jabalpur.

26. Someshwer Rao, Komandla. **Economic viability of RRBs in A P : A comparative study.** Kakatiya. Prof G Krishna Murthy, Department of Commerce and Business Management, Kakatiya University, Warangal.

Home Science

1. Baradha, G. **National Cadet Corps as a means of developing personality traits among students of higher education : An analytical study.** Avinashilingam. Dr (Smt) M Chandramani,

2. Malewar, Vandana Ghanshyam. **Nutritional profile of the selected nursing mothers of Parbhani.** Marathwada Agri. Dr (Mrs) N S Reddy, Head, Department of Foods and Nutrition, College of Home Science, Marathwada Agricultural University, Parbhani.

3. Ranganathan, Kamala. **Effect of detergents on fabrics for school uniform.** Avinashilingam. Dr R Raji.

4. Shukla, Maneesha Ramchandra. **Home makers environmentally concerned awareness, buying and consumption behaviour in relation to selected consumer goods.** Baroda.

5. Thethwar, Pragya. **The role of trace elements, copper chromium, cadmium and zinc, in human diet and diseases with special reference to diabetes mellitus and hypertension.** Ghasidas. Dr A K Pandey, Govt Adarsh Science College, Bilaspur.

6. Thomas, Tara. **Nutritional significance of samai, penicum miliare lamk, in the diets of tribals of Elagiri Hills, Tamil Nadu and feasibility of developing ready to eat/weaning foods based on their dietary pattern.** Avinashilingam. Dr (Tmt) Usha Chandrasekhar.

7. Vasugi, N. **Assessing reeling performance of different reeling machines establishing a reeling unit and evaluating sericulture as an income generating industry for women.** Avinashilingam. Dr (Smt) Vijayalakshmi Purushothaman.

Management

1. Kochuthresia, M M. **Women and political change in Kerala since independence.** CUST. Dr Jose T Payyappilly, Prof, School of Management Studies, Cochin University of Science and Technology, Kochi.

2. Narayana Rao, Vaddy. **Marketing of sugarcane : A study of marketing activities of sugarcane growers in West Godavari District, Andhra Pradesh.** Andhra

3. Rajmohan, S T. **A study of R and D management practices in select public enterprises.** Osmania. Prof E G Parameswaran, Prof (Retd), Department of Business Management, Osmania University, Hyderabad.

4. Sikder, Zahed Husain. **A comparative study of management control systems in selected industrial enterprises in Bangladesh and India.** AMU, Dr M Khalid Azam.

5. Sushama, R. **Role of academic bodies with special reference to the academic programmes in the Universities in Kerala.** CUST. Prof P Ramachandra Poduval, Director, School of Management Studies, Cochin University of Science and Technology, Kochi.

UDSC

University of Delhi
South Campus
Benito Juarez Road, New Delhi - 110021

Advt. No. UDSC/Estab.14/96

Dated : 30-12-96

Applications are invited on the prescribed form for the following posts so as to reach the Joint Registrar, University of Delhi South Campus, Benito Juarez Road, New Delhi - 110 021 latest by 29-01-1997.

S.No. Deptt. / Post (No. of Posts) / Specialisation desired

1 **Applied Psychology** : *Professor (1) (VIII Plan), Lecturer (1) (SC), For Professor : Communication Behaviour; for lecturer : Clinical Psychology

2 **Business Economics** : Reader (1) Econometrics/Systems & Operation Management

3. **Environmental Biology** : *Professor (1), *Reader (1), *Lecturer (2) (SC-1; UR-1) (VIII Plan)
The candidates who have done Environmental Biology/Environmental Science/Ecology/Biology/Zoology/Botany/Life Sciences/Biochemistry/Microbiology/Chemistry/Geology at M.Sc./M.Phil./Ph.D. level are eligible to apply for the posts of Lecturer/Reader/Professor.

4. **Genetics** : Reader (1)

5. **Mathematics** : *Reader (1), Algebra (VIII Plan)

6. **Plant Molecular Biology** : Scientists (2), Regulation of Gene Expression/Photobiology/Developmental Biology/Stress Molecular Biology/Biotechnology.
Note : These are non-tenure (contract) posts initially for a period of three years extendable up to a period of five years in all and no further extension.
Technical Officer (2) (SC-1;UR-1)
(i) Knowledge of computer-cum-word processing operation, and
(ii) Experience of scientific literature search.
For the other Post :
Desirable qualification is Diploma in the field of specialisation (Air-conditioning) and at least 10 years technical experience of maintenance and repair of air-conditioning and refrigeration machines. Experience relaxable in case of candidates with higher qualifications.
Technical Personal Assistant (1) Reserved for SC
Technical Assistant (1)

7. **Electronic Science** : Technical Assistant (1) Reserved for ST

Scale of Pay :
Professor : Rs. 4500-150-5700-200-7300
Reader : Rs. 3700-125-4950-150-5700
Lecturer, Scientist, Technical Officer } : Rs 2200-75-2800-100-4000
Technical Personal Assistant, Technical Assistant } : Rs. 1400-2300

Application forms and other details regarding prescribed qualifications for various posts can be had from Establishment Branch, Administrative Block Phase -1, University of Delhi South Campus, Benito Juarez Road, New Delhi-110021, during working hours either personally or by sending a self-addressed and postage stamped envelope (size 13 cms x 28 cms.) worth Rs. 10/-, at the above address.

Note
(1) 15% posts of Lecturers are reserved for SC and 7.5% posts are reserved for ST candidates.
(2) It will be open to the University to consider candidates who may not have applied.
(3) Number of posts is given within parenthesis against each post.
(4) University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.
(5) The relaxation of any of the qualifications may be made in exceptional cases on the recommendations of the Selection Committee.
(6) For Professor and Reader, other things being equal, preference will be given to SC/ST candidates.
(7) 3% posts of Lecturers are reserved for Physically handicapped candidates.
(8) *Posts have been sanctioned under VIII Plan but likely to continue.

J.C. Sachdev
Joint Registrar

SC Scheduled Caste ST Scheduled Tribe UR Unreserved

INDIRA GANDHI NATIONAL CENTRE FOR THE ARTS
SUTRADHARA DIVISION (IDP)

The Indira Gandhi National Centre for the Arts (IGNCA), an autonomous body under the Deptt. of Culture, Ministry of Human Resource Development, Govt. of India, is a National Resource Centre for the Arts. With assistance of the United Nations Development Programme, the IGNCA is implementing a project for Strengthening of National Facility for Interactive Multimedia Documentation of Cultural Resources. This activity will continue after this project.

2. IGNCA has established a state of the art networked multimedia laboratory to integrate key multimedia and graphic technologies, including 3D Modelling and Walk-Through.

3. The IGNCA needs dynamic professionals to strengthen its team of technical professionals in this "Cultural Informatics" Group

(i) **DIRECTOR MULTIMEDIA (1 Post)**

Scale of Pay : Rs. 4500-5700 (to be revised shortly)

The Director Multimedia will lead an established multimedia computer centre, organise training programmes and be responsible for operationalisation of hardware and software. He will also conceptualise, manage and implement several pilot projects, identify and collect source material and help market/disseminate the end products. Appointment on contract, deputation or re-employment basis. Age not be a bar for the right candidate.

Minimum Qualifications and Experience:

M.Tech or Ph.D or equivalent post graduate degree in Computer Science/electronics/electricals/mathematics/operational research with not less than 10 years experiences in the field including 3 years experience in managerial capacity or as a Head of a division/centre and two years experience in using multimedia technologies for presentation/research/educational projects. Familiarisation with Graphics User Interface (GUI), Object Oriented Programming Systems (OOPS), Multimedia hardware and software, Large Databases for archival etc. is desirable. The candidate will have to show self drive, initiative and commitment to deliver results. Any past experience with Multimedia projects, computer based training will be added advantage.

(ii) **PROJECT MANAGER (2 Posts)**

Scale of Pay : Rs 3700-5000 (to be revised shortly)

The Project Managers will be responsible for interactive multimedia applications in the field of art and culture, organising training, workshops, documentation, production of multimedia titles and marketing and dissemination.

	Minimum Qualifications	**Experience**
1.	Ph.D in Computer Science/ Electronics/Electricals/ Mathematics/Operational Research	5 years with atleast 1-2 years experience in using multimedia tools as Project Leader.
2.	Master's degree in Computer Science/Engineering	7 years experience with 3 years with computers and minimum 1-2 years in multimedia technologies.
3	Bachelor's degree in Computer Science/ Engineering	8-10 years experience including 4-5 years with Computer and 1-2 years in multimedia technologies.

Age Limit : Not more than 35 years (as on 1-1-1997)

(iii) The Cultural Informatics Group also requires young professionals in various disciplines as indicated below:-

Sub Group Name	**Desired Specialisatiton**	**Number of Posts**
A. Hypermedia Software Design	Human Computer Interaction/ Hypermedia/Multimedia Data Base/Computer Graphics/Computer Vision/Object Oriented Analysis, Design and Implementation/Internet Programming/Software Quality Assurance/SoftwareDocumentation/ Adaptive Systems.	10
B Computer Graphic Design	Computer Graphic Design/3D Modelling/Animation/Architectural Walk-Through/Digital Video Editing/User Interface.	4
C. Instruction Design	Cognitive Psychology/Feature Writing (English and Hindi)/Instruction Design for Art History/Archaeology/ Anthropology/Sanskrit/Indology.	2
D. Technical Computer/ Support	Computer Centre Management/ Maintenance/DTP/Scanning/Data Entry/Multimedia	8

The essential qualification and experience for all the posts are indicated below:-

Minimum Qualification MIN.POST QUALIFICATION, EXPERIENCE IN ONE OR MORE OF THE ABOVE INDICATED DESIRED SPECIALISATION AREAS (IN YEARS)

SUB GROUP A	SYSTEMS ANALYST	SR. PROGRAMMER	TECHNICAL WRITER	ASSISTANT PROGRAMMER
SCALE CAT.	I	II	II	III
i) M.Tech (Comp. Sc or related areas) with MCA/ BE (Comp. Sc. or related areas) M.Sc. (Comp. Sc)	2	Nil	Nil	N.A.
ii) MCA/BE (Comp.Sc. or related area)	3	Nil	1	N.A.
iii) M.Sc (Comp Sc.)	5	1	1	Nil
iv) B.Sc.(Comp. Sc.) Three years Diploma in Computer Science.	8	4	4	1
v) M.A. English with specialisation in Software Documentation.	N.A.	N.A.	2	N.A.

SUB GROUP B	SR.COMPUTER GRAPHIC DESIGNER	COMPUTER GRAPHIC DESIGNER	ASSISTANT GRAPHIC DESIGNER
SCALE CAT.	I	II	III
i) M.Des.	2	Nil	N.A.
ii) MFA/B.Arch	3	Nil	N.A.
iii) BFA	4	1	Nil
iv) Dip.Arch.	8	4	1
v) Others	N.A.	6	2

SUB GROUP C	SENIOR INSTRUCTIONAL DESIGNER	INSTRUCTIONAL DESIGNER	ASSISTANT INSTRUCTIONAL DESIGNER
SCALE CAT.	I	II	III
i) Ph.D	3	Nil	N.A.
ii) M.Phil	6	2	Nil
iii) M.A.	7	3	Nil

SUB GROUP D.I	SYSTEM SPECIALIST	HARDWARE ENGINEER	TECHNICAL ASSISTANT
SCALE CAT.	I	II	III
i) B E (Electronics or equivalent)	4	1	N A
ii) Three year Diploma in Electronics or equivalent)/M.Sc. (Electronics or equivalent)/PG Diploma in Computer Maintenance	9	5	2

SUB GROUP D.II	MULTIMEDIA ASSISTANT	SR.DATA ENTRY OPERATOR/ SR SCANNING OPERATOR	DATA ENTRY OPERATOR/ SCANNING OPERATOR
SCALE CAT.	III	V	IV
i) Pg Dip in Multimedia	1	N.A	N.A
ii) Dip. in DTP/ Photography/ Painting.	6	3	6 months
iii) Others	7	4	1

SCALE OF PAY

The present pay scales in different scale categories are as under but are likely to be revised shortly

Category I	Rs. 3000-4500
Category II	Rs. 2200-4000
Category III	Rs 1640-2900
Category IV	Rs 1400-2300
Category V	Rs 1200-2040

Age Limits for direct recruits not more than 35 years (as on 1-1-1997).

General:

(a) The number of posts indicated are liable to variation depending on project requirements and the post indicated in item (III) above will be operated in different scale categories depending on availability of suitable persons meeting the prescribed qualifications and experience.

(b) Candidates can apply for more than one post but they should submit separate applications for each post/sub group.

(c) The persons appointed to the post will be considered for award of suitable project allowance depending on their performance assessment.

(d) The persons appointed to the post are entitled to house rent allowance at 30% of their basic pay at present. Other allowances will be as per the Central Govt. pattern.

(e) Candidates called for interview from outstations will be reimbursed second class return railfare by the shortest route

(f) Persons already in the employment under the Govt./autonomous bodies/undertakings/academic institutions must apply through proper channel and they can be considered for appointment on deputation or on contract Such candidates from outstations will be reimbursed first/second class return railfare by the shortest route as per their entitlement in their parent office.

(g) All the posts are temporary till the project period which is presently upto 31.3.99 but are likely to be continued further

(h) The candidates will be liable to undertake tours within India and may be deputed for fellowship training within India and abroad depending on project needs.

(i) Higher scale/starting salary can be considered in deserving cases.

(j) Length of experience can be marginally relaxed for otherwise very bright applicants with proven track record and directly applicable expertise.

(k) Candidates will have to execute a bond of service at the time of their appointment for a period till the project is completed and for such further time as many be decided by the IGNCA if they are deputed for training within India or abroad

Candidates fulfilling the prescribed qualifications and experience may send their applications giving their bio data on plain paper by post to the Under Secretary (IDP) Indira Gandhi National Centre for the Arts, No 3, Dr Rajendra Prasad Road, New Delhi-110 001 **within 21 days** from the date of advertisement The envelope containing the applications must superscribe the name of the post applied for

davp 1212(3)96

Indira Gandhi National Open University

Applications are invited from INDIAN citizens possessing the requisite qualifications and experience for filling up the following posts in the pay scale shown against each plus allowances as admissible under the University rules

Sl. No.	Name of the Post	Pay Scale (in Rs.)	Age limit in years	Number of Posts				
				SC	ST	OBC	UR	Total
1.	Director	4500-7300	-	-	-	-	1	1
2.	Jt. Registrar	4500-6300	53	-	-	-	1	1
3.	Assistant Registrar	2200-4000	40	2	2	2	3	9
4	Stenographer	1200-2040	28	5	7	2	4	18
5.	Junior-Assistant-Cum Typist	950-1500	25	-	4	-	-	4

Regarding qualifications, experience, age etc., please refer our detailed Advertisement published in *Employment News* dated **28.12.96.**

Candidates must apply in printed application forms which will be supplied on receipt of a written request to **the Section Officer, Recruitment Cell, Block No. 4, Room No. 18, Indira Gandhi National Open University, Maidan Garhi, New Delhi-110 068, along with a Demand Draft of Rs. 25 (Rs. 10 for SC/ST candidates) drawn in favour of IGNOU, PAYABLE AT NEW DELHI** and enclosing a self-addressed envelope of size 13 X 28 Cms. duly affixed with postage stamp for Rs. 2. Separate application form is required for each post.

Last date for supply of application form is 31.01.1997

Last date for receipt of application forms duly completed in all respects is 17.02.1997.

Requisition/Applications received after last dates will summarily be rejected.

Advt.No. 20/RECTT./96

REGISTRAR

ANNA UNIVERSITY : CHENNAI 600 025

This University, established in the year 1978 as a unitary type of University, offers higher education in Engineering, Technology and Allied Sciences relevant to the current and projected needs of the society. The University was formed by integrating the four well-known technical institutions in the city of Madras, (i.e.) the College of Engineering, Guindy, the technology departments of the University of Madras situated in the Alagappa College of Technology, the School of Architecture and Planning of the University of Madras and the Madras Institute of Technology, Chromepet. Offering 23 Undergraduate Programmes, 47 Post-graduate Programmes and 4 Post-graduate Diploma Programmes and with a student enrolment of 5545. Facilities are available for M.Phil programme in the faculty of Science and Humanities and Doctoral Programme in all the faculties.

The courses conducted by this University are very much relevant to the growth of our country in providing expertise and technological man-power in the field of Mining Engineering, Rubber Technology, Ceramic Technology, Footwear Science and Engineering, Construction Engineering and Management, Biotechnology, Petroleum Refineries and Petrochemical Engineering, Avionics, Sugar Technology, Geo-Informatics, Printing Technology, Energy Resources etc.

Several projects with international fundings are carried out in the following centres and institute.

1. Centre for Water Resources and Ocean Management
2. Centre for Environmental Studies
3. Centre for Biotechnology
4. Crystal Growth Centre
5. Institute of Remote Sensing

A state of the art Institute called "AU-FRG Institute for CAD/CAM" has just been established with German assistance (CAD/CAM Stands for Computer Aided Design and Computer Aided Manufacturing).

A special emphasis will be laid on collaborative programmes to have more interaction with industries and to concentrate more on research and development activities in identified thrust areas.

REGISTRAR

ADMISSION NOTICE

INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES

(Deemed University)

Govandi Station Road, Deonar, Mumbai - 400 088.

Invites applications for admission to the following course in Population Studies for the academic year 1997-98 :

MASTER OF POPULATION STUDIES (M.P.S.)
(One year full time course) 25 seats

Eligibility :

Master's degree in any of the following disciplines .
Statistics, Mathematics, Economics, Psychology, Sociology, Geography and Anthropology.
Candidates appearing in the final year for qualifying examination by May/June 30, 1997 may also apply and their admission is subject to marks obtained in the final year examination

Admission Criteria :

Fellowship :

Admission is based on merit only. Selected candidates will be given a Government of India fellowship @ Rs. 1300/- per month.
A few seats may also be filled without fellowship. Some officials can also be sponsored by Government departments, research institutions, universities, medical colleges and non-Governmental organizations for being considered for admission.
Reservation for SC/ST candidates will be considered as per the UGC norms

Availability of Application form :

Prescribed application form and information can be obtained from the **Assistant Registrar (Academic)**, *International Institute for Population Sciences, Deonar, Mumbai - 400 088* by sending a self addressed Rs. 5/- stamped envelope (25 cm x 12 cm) from March 10, 1997 up to April 30, 1997
Last date for submission of duly filled-in application form along with a Demand Draft for Rs. 50/- (Rupees Fifty only) drawn from a nationalised Bank in favour of the Director, IIPS, Mumbai is: May 20, 1997.

January 2, 1997
Mumbai : 400 088.

DIRECTOR

MINISTRY OF HUMAN RESOURCE DEVELOPMENT
DEPARTMENT OF EDUCATION
ES-3 Section

CHINESE GOVERNMENT SCHOLARSHIPS, 1997

1. Applications are invited from Indian nationals on plain paper in the format given below for the award of 13 Chinese Government Scholarships tenable from September, 1997 *for higher studies/research/specialised training in the subject fields of Chinese Langg.* Literature, Acupuncture & Traditional Chinese Medicines, Physics, Chemistry, Zoology, Bio-Technology, Plant Breeding & Genetics, Environmental Sciences, Fine Arts, History, Fisheries, Agronomy, Sericulture and Botany.

2. **Eligibility Conditions : (a) Qualifications :** i) Chinese Language & Literature : Two or three years basic grounding in Chinese Language. (i.e. either a certificate or diploma from reputed/recognised institutions). ii) Fine Arts: Bachelor's Degree in Fine Arts with 60% or above marks. iii) Acupuncture & Traditional Chinese Medicines: Bachelor Degree in Medicine (including traditional Indian Medicines) with 60% or more marks and two years experience. iv) Other subjects: A post-graduate degree with 60% marks in aggregate or related subject alongwith 2 years teaching and research in the related field. Prior knowledge of Chinese Language is not necessary where medium of instruction is English. However, selected candidates will have to undergo Chinese Language study prior to undertaking study in the areas of their choice, where medium of instruction is Chinese. **b) Age limit:** Below 40 years on 01.09.1997. (i.e., born on or after 01.09.1957). Relaxation for SC/ST etc candidates is two years. **c) Value of scholarships:** For undergraduate students, 320 Yuans, for Master's degree and general advanced students, 350 Yuans for Doctoral candidates and senior advanced students, 380 Yuans, Govt. of China will provide board, lodging, medical care and bear expenditure on tuition and other fees etc. In addition Govt of India is also giving grant to supplement the scholarship. **d) Cost of Passage:** Govt. of India will bear the international passage cost from India to China and back. **e) Duration of scholarship:** Normally one year but extendable on year to year basis wherever necessary. **f) Last date of submission of application:** Applications on plain paper (as per format given below) alongwith attested copies of all certificates/degrees/diplomas and mark sheet of qualifying degree should reach the 'Director (Scholarships), Deptt. of Education, Ministry of Human Resource Development, A.I/W.3 Curzon Road Barracks, Kasturba Gandhi Marg, New Delhi-110001' **latest by 20th February, 1997** Applications received after this date will not be considered. Employed candidates should forward application through the employer by due date alongwith 'no objection certificate'. However, an advance copy of application may also be sent by due date with the understanding that the application through employer will follow. If no communication is received from this Ministry by 15.04.1997, it may be presumed that the candidate has not been considered for the award.

Notes : (i) Equivalent foreign degrees will also be considered. (ii) Candidates who have already been abroad for study/training specialisation for more than six months on a scholarship are eligible to apply only if they have been in India for atleast two consecutive years after their return from abroad. Applications of candidates, who are abroad at present, will not be considered. (iii) Where grades are mentioned the candidates must indicate the conversion formula adopted by the University/Institution. (iv) Candidates should have sufficient knowledge of China as well as India. (v) Applications of the candidates in subject fields other than specified above will not be considered. (vi) Candidates who do not possess the requisite qualifications need not apply. (vii) A copy of recent passport size photograph should be affixed on the right hand corner of the format. (viii) Incomplete applications will not be considered. (ix) The final selection rests with the donor country.

PROFORMA FOR APPLICATION

1. Name of the scholarship Scheme : Chinese Govt. Scholarship, 1997.
2. Subject (write any of the subjects given in the advertisement)
3. Name of the Candidate (in Block letters) with full mailing address.
4. Date of birth and the State to which the Candidate belongs.
5. Whether Member of SC/ST
   (A certificate from the competent authority should be attached)
6. Academic record starting from High School/Higher Secondary
   (Attested/Photostat copies of certificates to be attached).

Recent passport
size Photograph
to be pasted.

Name of the University Board/Instt.	Examination(s)	Year of passing	Division/Class with position if any (In case no class is awarded & only grading is done the conversion formula may be mentioned)	Percentage of marks obtained and position if any	Subjects taken
1	2	3	4	5	6

7. Details of professional practical training and Research experience specifying the period and number of papers published/previous employment.
8. Nature of the present employment with name and date of appointment/designation and the name & address of the employer
9. Have you been abroad? If so give full particulars of the country visited and the period of stay. Also mention the date, month and year of return to India (purpose of visit also to be indicated).
10. Proposed programme of study/research and Training specifying the following:
    (i) The work at present engaged in:
    (ii) Nature and Programme of study/research/training desired:
    (500 words —4 copies)
    (a) Title of study/research:
    (b) Hypothesis/Objective of study:
    (c) Methodology (to be adopted):
    (d) Institutions where such studies are being done:
    (e) Relevance of study in Indian/academic contact

Place:
Date:

SIGNATURE OF CANDIDATE

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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 3 JANUARY 20, 1997 Rs 9.00

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Teachers' Perception of Unfair Means

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Language — The Autobiography of a People — Convocation Address

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Association of Indian Universities

RAJASTHAN MANAGEMENT ADMISSION TEST (RMAT) 1997

Admission to the Master of Business Administration (MBA) course of the following institutions in Rajasthan would be made for the session 1997-98 through a common admission test to be conducted on All India basis.

	Name of Institution	No of Seats
1.	Faculty of Management Studies, M.D.S. University, **Ajmer**	30
2.	Institute of Management Studies, B.J.S. Rampuria College, **Bikaner**	30
3.	R.A. Podar Institute of Management, Faculty of Management Studies, University of Rajasthan, **Jaipur**	35
4.	Department of Business Management, Jai Narayan Vyas University, **Jodhpur**	31
5.	Om Kothari Institute of Management, **Kota**	60
6.	Faculty of Management Studies, Mohan Lal Sukhadia University, **Udaipur**	30

The distribution of 'free' seats and 'payment' seats (if any) wherever applicable in these institutions would be in accordance with the relevant AICTE regulations.

Date of Test : 11th May 1997, 9 A.M. to 11 A.M.

Eligibility: Graduation or equivalent from any university. Provisional approval for appearing in RMAT would be granted to candidates taking final year graduation examination in 1997

Reservation: 15% for Scheduled Caste candidates and 7½% for Scheduled Tribe candidates on available free seats.

TEST CENTRES

Ajmer, Ahmedabad, Bangalore, Bikaner, Chandigarh, Hyderabad, Indore, Jaipur, Jodhpur, Kota, Lucknow, Mumbai, New Delhi, Varanasi, Udaipur.

RMAT AND ADMISSION FORMS

The RMAT information booklet including the RMAT application form may be obtained from the Coordinator RMAT, Faculty of Management Studies, Mohan Lal Sukhadia University, Udaipur, by sending a Bank Demand Draft of Rs. 500/-, drawn in favour of "Coordinator RMAT" payable at Udaipur, before 15th March, 1997. The booklet and the application form would also be available for sale up to 25th March 1997 at the counter of Faculty of Management Studies, Udaipur on any working day during office hours on production of a bank Demand Draft for Rs 500/- drawn in favour of "Coordinator RMAT"

The candidates will also have to fill the MBA admission forms of the Institutions of their choice. They must obtain these forms directly from these Institutions.

LAST DATE

Last date for submission of complete RMAT application to the Coordinator, RMAT, Faculty of Management Studies, Mohan Lal Sukhadia University, Udaipur is **25th March, 1997**.

GENERAL

RMAT coordinator would prepare a merit list of candidates eligible to be considered for admission to MBA course of the above listed Institutions. Admissions will finally be made to these Institutions on the basis of academic record and aggregate marks obtained in the RMAT and the group discussion and personal interviews to be conducted by the concerned Institutions thereafter, the schedule for which would be announced by the coordinator RMAT.

A.K.Singh
Coordinator RMAT
Mohan Lal Sukhadia University
Udaipur-313001

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Editor :
SUTINDER SINGH

Distance Education Programmes

A Marketing Approach and its Implications

P.V. Desai*
P.R. Shah

The Context

The new economic reforms programme of the Government of India has created far reaching impact on the working of all the sectors of Indian economy. Education is no exception to this. Educational and training institutions in private sector and those in collaboration with their counterparts in foreign countries have responded quickly and in the right manner to this trend in Indian educational environment. Educational programmes and modes of their delivery are fast changing. University system and other systems of formal education at different levels appear to be little slow and directionless in this respect. In the midst of this environment emerges the government policy of encouraging Distance Education Programmes (DEPs).

The fact remains that there is a tremendous scope for DEPs and at the same time the concept of DEP and the specific programmes are not catching up with the demand. Why this paradox ? How has it emerged ? What can be done? This paper attempts to provide an approach to the answer by suggesting a marketing framework for DEPs.

Objectives and Scope

This paper aims at presenting DEPs in the conceptual framework of marketing and attempts to highlight its implications, particularly for the institutions offering such programmes.

So far as scope of the paper is concerned, we can examine the marketing aspect of education in general and DE in particular from either of the two angles — marketing of the concept of DE itself or marketing of DEPs. The first is the domain of the policy makers in the Ministry of Human Resource Development (MHRD) and agencies working under or associated with it. The second falls within the domain of the educational institutions established for the specific purpose of developing clearly targeted, specific programmes. They are expected to offer DEPs through various chosen channels and to deliver them to focused group for their perceived needs and benefits. For the purpose of this paper, we will largely keep the former out of our discussion.

Beginning with a review of the DEP environment, the paper moves on to relating various marketing concepts to DEPs design, execution and monitoring. In the end, some of the implications are highlighted which will be found useful by educational institutions engaged in DEP design and delivery.

Elements of DEP Environment

The entire system of DEP has to function within its external as well as internal environment. The external environment refers to the

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new learners (from neo-literates to multi-skill requirements), HRD orientation (calling for life-long learning for pro-active initiatives), national priorities (for growth, stability, cross-cultural response), funds allocated to education (by the centre and states — as a % of GDP), ways of attracting faculty, avenues for technology, professional bodies, industries, etc.

The internal environment (internal to DE institutions) refers to the performance and efficiency of the organisational management systems, financial condition of a DE institution, the skills and profile of the faculty and support staff, the physical facilities and resources; and orientation of media to the efforts and output of the programmes offered by an institution.

DEPs in a Marketing Framework

1. *Education Market and its Peculiarity*

It appears as if the field of education is fast becoming a market where various institutions like formal schools and colleges, private institutions, foreign-based institutions etc are the players and students and potential students are the customers. This trend underlines the need for marketing approach in planning and execution of educational programmes.

Marketing is difficult in a service industry, more so in education, because the needs to be served are hard to be perceived and articulated, distribution is difficult, the targets are imprecise and, evaluation and feedback are difficult. Further, the economic and social dimensions of the programmes offered are no less vital than the apparent academic inputs and channels which may be more visible.

2. *Objectives of Education and DE*

As in case of all business products and services, DE objectives are derived from objectives of education itself for which policy guidelines are laid down at the highest level along with the priorities of HRD Ministry. This is supported by a network of institutions to carry the objectives through, and the budgetary provisions therefor. These observations underline the need for a comprehensive and crystal clear statement on role, objectives and policy on education in the country.

3. *DE Products*

For the purpose of HRD Ministry, the concept of DE itself is a product to be marketed before various institutions engaged in offering educational programmes (e.g. universities); and the potential learners in the country. These institutions conceive various DEPs as the *"products"* and deliver them to meet full needs of the target groups.

4. *Market Segmentation*.

Marketing is a critical dimension of adopting the offerings of DE institutions to various segments i.e. the target groups so that the right programmes are offered to the right groups in an efficient and effective manner, and the design to delivery aspects are constantly monitored by HRD Ministry through its agencies so as to achieve the goals of education, particularly those of DEPs.

Proper segmentation is important because marketing strategy has to be based on the segments to be served. This will include disadvantaged groups and those who have had the benefit of formal education and now want to enrich their own exposure. The segmentation exercise will also depend on whether we want to promote cognitive knowledge, usable skills, positive attitudes or durable values.

5. *Product Design*

Having identified the groups — say, men and women in different geographical areas and living in a variety of social settings, we have to study their perceived needs and priorities and develop alternative way of satisfying them, considering their cultural ethos, their limitations of time, language, physical environment and group learning norms. Thereafter the contents of the programme, development of study material, physical facilities, sequence of academic calendar, admission evaluation requirements have to be beefed up. This is what we call the "product design". It will help the beneficiaries to compare the services and the output, facilitate self learning for their own goals, through their investment of time, efforts and money.

6. *Regional Setup and Distribution Points*

Large institutions like national level universities execute and monitor their DEP systems through regional centres. These centres develop detailed plans for DEPs and engage themselves in close monitoring and guiding the execution and delivery process which takes place at the study centres (distribution points).

As the learners are removed in time and place from the sources of academic input, ways will have to be devised to setup and activate study centres or distribution points which could be used by the potential learners for queries, access to services, complaints, suggestions and face-to face feedback. One has also to consider ways of adding flexibility to the use of resources by offering technological options.

7. Pricing of DEPs

Pricing is also a crucial point. As the fixed costs are heavy and the variable costs also cannot be fully recovered for every programme, a DE institution will have to attempt to add perceived value to the offerings ("Packaging" of a DEP!) and see that the subsidies, if any, are worthwhile to the learner and affordable to the institutions. There is some scope for price discrimination also.

A serious consideration of pricing of DEPs will also bring to surface the need for efficient financial accounting systems, cost control/reduction measures and government policy on financial assistance to DEP institutions.

8. *Promotion*

In traditional education system, promotional effort in marketing of education programmes is not given formal recognition. It appears that promotional measures will become increasingly important in marketing of DEPs in future; thanks to increased competition among educational institutions and increasing awareness about needs among the potential "customers".

Promotion of DEPs will call for motivations by government agencies for DE institutions, motivation and incentives for learner groups; and formal allocation of financial resources for promotional effort. Attracting and retaining good faculty, encouraging study centres for efficient delivery of DEPs and motivating learners to take their studies seriously — will also call for promotional effort specifically directed to a particular DEP. In macro sense, the promotional effort for DEP would aim at attracting physical, financial and manpower resources of the community and its agencies for the long term benefits of the society. Communication firms can help government agencies and DE institutions to a great extent in design and execution of promotional effort.

9. *Marketing Organisation and Control Systems*

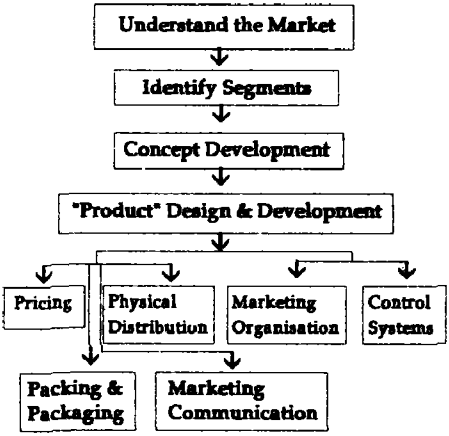
Alongwith the above pillars of marketing mix, attention also needs to be paid to marketing organisation and marketing control systems. A marketing organisation cannot be set up overnight. But a beginning can be made by seeking help from marketing firms until the top management is fully convinced about the role of marketing inputs.

Later, better employee hiring practices, rewarding market oriented employees and training programmes for functionaries and small projects, say, on features of designated market segments or on DE fund raising, can be initiated.

Marketing control systems cover the whole gamut of various functions and departments of DE systems as responsibility centres, annual plans and budgets, operational control, accounting, reporting and performance evaluation. Design and implementation of these control system would also imply ensuring clear lines of authority and responsibility. At the strategic level, marketing audit of DEPs by HRD Ministry and DE institutions will have to be utilised in future as a powerful tool. The process of review and evaluation of DE concept and DEPs will draw heavily from the findings of market research conducted on different aspects of DE System, DEPs, their execution and monitoring.

What is stated above has (a) established a link between educational environment and DEPs, and (b) provided a conceptual framework for marketing of DEPs in India. This paper will be incomplete if we do not translate the proposed framework into a set of implications for all the institutions, agencies and individuals operating in the Education Market.

DEPs Marketing Process



Implications

The external and internal environment of DEP, and the present setup are likely to create both problems and opportunities for the DE system in many ways. Let us pinpoint some of them :

1. *Marketing Objectives*

i) Government and non-government agencies engaged in planning and execution of the concepts of DE and DEPs must bring more clarity of purpose. Lack of such a clarity will result in lack of direction, wastage of resources and ineffectiveness of DEPs. Such a clarity will help in defining the role and expectations from the Marketing effort.

2. *Marketing Strategy*

i) Institutions engaged in offering DEPs will have to come out with "products" which will be responsive to changing environment;

ii) For providing better services to "customers" computer and communication technology applications will be necessary even in marketing and administering a DEP;

iii) Research-based programmes will have to be identified to cater to the needs of deprived communities and other weak segments. This could be focused on regional needs also;

iv) For ongoing product improvement, research will be needed on continued basis;

v) Efficient, marketing communication will have to be established and strengthened. In this process, computer application and various communication media will have a crucial role to play.

vi) Positioning of a DEP in DEP market will become a crucial aspect of DEP marketing;

vii) For bringing uniqueness in a DEP, educational technology and communication media will have to be built into the product design;

viii) Formal use of advertising and promotional effort for DEPs will become a common practice. Allocation of resources for this purpose will also increase;

ix) Marketing of DEP will become critical from point of view of investment recovery due to high investment in high-tech equipments and problems of increasing fees for the programmes.

3. *Product Features and Learning Process*

i) Learning will be more multimodel and interactive rather than uni-directional. Access points and access hours/days will be enlarged and extended.

ii) New programmes, both academic and skill-based will be demanded and the *product life cycle* of existing programmes will be shortened.

iii) Programme structure and learning process will become more flexible.

iv) Resources will be shared among DE institutions.

v) Credit transfer will be more widespread.

vi) Faculty with skill and orientation will be drawn from a variety of sources.

vii) In a learning society, DE will require more of research inputs to identify viable, need-based programmes for more and more upwardly mobile groups (women and deprived communities in particular). The increased need will be felt to tailor, modify, combine and even give up the programmes which would have outlived their earlier functional role.

viii) Language will be a major hurdle because of growing mobility across different ethnic groups & increasing emphasis on team work in occupations.

ix) The entire setup of examinations is likely to be revamped to achieve credibility, objectivity and level certification needed for economic and administrative purposes.

x) Technology promises to play a major role facilitating transparency, convenience and economy of effort for learners.

4. *Marketing Organisations and Systems*

i) The DE system will be expected to encourage innovations in design and marketing of DEPs.

ii) Significance of marketing will have to be recognised in the organisational setup and control system for a DEP.

iii) Establishing marketing communication with heterogeneous, geographically scattered groups of people will be a challenge for communication system.

iv) Marketing orientation will increase and it will be reflected in development of special promotion programmes, advertising effort, financial provisions and control systems for DEPs.

Conclusion

Market of DEPs is becoming more and more competitive. Potential beneficiaries of DEPs are also increasing in number and they are becoming more aware of their needs. This implies that our policy formulators and planners as well as the institutions engaged in offering DEPs will have to bring in a greater degree of marketing orientation in their planning and control systems and organisational setups. Only this will give the society better DEP ideas, designs and their efficient execution.

Educationists will have to ponder over major system-wide and product related issues of more relevant DE products, networking, faculty development, level of fees and remission and constant updating of programmes. Open communication among learners, potential learners, faculty, DE institutions and administrative wings on the one hand and funding agencies, employees, mass media and government on the other will be the critical factor that will facilitate the success of DEPs in India.

Learning "Learning Styles"

R.S. Pandey*
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Introduction

Education is not mere imparting of information in some selected subjects. Acquisition of knowledge is only one of the outcomes of education. The role of education now is to help the educated to discover himself to develop his innate abilities and above all to cultivate desirable attitudes and values. This new role of education has put great responsibility on teachers in general and teacher-educators in particular. This has also resulted in changed concept of teaching and learning. Science and technological developments in the last four to five decades have accelerated this process. Bruner, the famous psychologist has suggested that teaching be regarded as a temporary arrangement intended to enhance the learner's capacity to learn for himself. Psychologists, educationists and researchers in the field of education have been busy in inventing new ideas, models, techniques, strategies etc in the sensitive areas of education which influence greatly the process of teaching and learning both. The learner has now emerged as the key centre of whole process of education. Teaching is made adaptive to the learner's ability, personality, interest, attitude etc. Only that teaching is considered effective which leads to desired changes in the learner. Galloway (1976) has correctly remarked, "The teacher must also be effective at teaching especially for those children whom he identifies as poor learners, since the simple truth is that poor learning usually follows from ineffective instruction." Thus, the question emerges as to how a teacher could become effective for each of the students.

Traditionally, teaching has been viewed as an art practised by each teacher, often intuitively, according to his own unique beliefs, values, abilities and other personal characteristics. Only recently teaching has been viewed as a science i.e. as a systematic application of rules of science of human behaviour in organizing instructions for learners. Consequently the need has been felt to remove some of the intuitions from teaching necessary for the practice of an art, but clearly insufficient for effective and scientific instruction.

Need

Despite a wealth of well constructed researches, 'schools' in general continue to function in the 'dark ages' in terms of teaching learning process. In any given classroom, it is not very likely that any two students learn the same thing in the same way at the same pace. Extensive data verify the existence of individual differences among youngsters. Individualized instruction has become the need of the day and therefore researches in learning need to be carried out in the area individualised instruction. The situation as prevailing in our classrooms is that the instruction is carried out with relatively large heterogeneous group of students. Besides physical differences, the students in classroom differ in various abilities, background characteristics, personality traits, etc. Classroom observations reveal that the students differ in their reaction time, in the amount of encouragement they need to perform a learning task; in terms of amount and type of motivation they require; in the ways in which they deal with a given task and so on. For planning a systematic instruction different types of informations about the learners are needed. Thus, the 'learning how to learn' is not merely a nice sounding slogan for teachers but a reality without which the teacher cannot do justice to his students.

Thus, the most crucial problem of education now is how to cater to the individual differences so that the teaching may be made more meaningful and adaptive for all the students. Educating each individual in the classroom through individualized instruction is not a dream now-a-days. To meet the challenges which arose out of the fact that individuals differ very much in all aspects of their lives, various methods and techniques of teaching and learning have been developed by researchers, educationists and psychologists. Identifying students' learning style is a one such technique. It is very important for the teacher to know as to what are the learning styles of students? Do they vary significantly? What type of learning procedures and activities promote the most rapid and successful learn-

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ing by students who have deeply ingrained patterns for their own learning. Researchers and educationists are now attempting a thorough work in the area of learning styles and have found it a very potential one in influencing the student learning. Emphasising the need to diagnose the learning styles of students, Dunn and Dunn (*1978*) say, "To bring them (students) into a confining environment and to group them in a way that makes educational sense, is virtually impossible unless we examine each of these complex individuals to identify exactly how he or she is likely to learn most effectively.... Achievement scores only reveal where the child is academically. I.Q. tests merely suggest a child's potential, not why he or she has not progressed further or more quickly. Personality instruments serve to explain the youngster's behaviour, but they provide little insight into how to help him or her to achieve. It is possible, however, for teachers, to help each student learn more effectively by diagnosing the individual's learning style."

Educationists have started viewing learner in various ways and are developing programmes which fit their conceptions of how children learn most effectively. Unfortunately students are frequently placed in programmes in a fashion based on factors other than educational considerations. Dunn and Dunn (*1974, 1975, 1976*), Hunt (*1972*) and Kaley (*1977*) emphasized the need to understand that children learn in unique ways, varying in degrees of similarity. Therefore, placing a student into an educational programme should be based on the way he learns and not on the supposed value of a given programme. This necessitates diagnosing each student's learning style.

Each individual's growth presents a different range of problems and requirements, at every stage — from the womb to tomb. The catalytic action of education in this complex and dynamic growth process needs to be planned meticulously and executed with great sensitivity. These days when knowledge is multiplying day by day; where new methodologies, strategies and techniques are being invented; where new approaches and systems are being explored; where new models are being initiated to redesign and reshape the prevailing academic environment in institutions to keep pace with the increasing knowledge in each sphere; where educational literature is being enriched by new innovations, the objective of making learning more promising and maximally effective to the learner can be achieved by making instruction individualized. In present situations, it seems important to highlight the learning variations among students by taking into consideration their learning styles.

Concept of Learning Style

Learning style may be referred specifically to a person's characteristic pattern of behaviour in a particular learning field. The determination of functional levels and specific deficits provide the essential information for deciding "what a child should be taught and deciding 'how' to teach him effectively requires a different database.

Various psychologists and educationists have defined the term 'learning style'. In simple words, a student's learning style is the way with which he learns best. Laycock (*1978*) described learning style as "an individual's characteristic way of responding to certain variables in the instructional environment". Sigel and Coop (*1974*) viewed learning style as "an integral concept that bridges the personality cognitive dimensions of individuals". Gibson (*1976*) defined learning style as "the different ways in which people process information in the course of learning". Agarwal (*1987*) however, was not fully satisfied with the above definitions of learning style. He has viewed learning style in terms of elements or factors that affect the learning of student in one way or the other. He defines learning style as "sum total of individual's preferences for physical, social, emotional and environmental elements in the course of learning". Since these elements may vary in degree for different students and in different situations, there may be various types of learning styles for different students.

Types of Learning Styles

Students in a given classroom may vary not only in the things they know and in their capabilities for learning but also in ways in which they approach and deal with a given task. Noor (*1972*) has classified the students in five categories on the basis of how they approach a given learning task. Reissman (*1966*) has identified three basic learning styles; Dressel (*1976*) has identified three basic learning styles while Laycock (*1978*) have given six most common learning styles. Shumsky (*1968*) has given four learning styles while Biehler (*1974*) has identified eight learning styles. Various authors and researchers, thus seem to disagree on types of learning styles. Agarwal (*1983*), analysed the all available literature on types of learning styles and chose the following eight learning styles as most suited, relevant and important from the point of view of (i) teaching learning process; (ii) Indian context; and (iii) his definition of learning style. These are :

1. Individualistic vs. Non-individualistic;
2. Field independent vs. Field dependent;
3. Motivation centred vs. Non-motivation centred;
4. Aural vs. Visual;
5. Environment oriented vs. Environment free;
6. Flexible vs. Non-flexible;
7. Short attention span vs. Long attention span; and
8. Responsible vs. Irresponsible.

Individualistic vs. Non-individualistic :

Students who enjoy working on their own on some educational task have been described as having individualistic learning style. Whereas others who prefer carrying out any educational task with a group or in a team have been characterised as having non-individualistic learning style.

Field independent vs. Field dependent :

Students who do not prefer to work in structured learning situations have been classified as having field independent learning style. On the other hand, students who enjoy working in structured learning situations are classified as having field dependent learning style.

Motivation centred vs. Non-motivation centred :

Students who are eager to learn more and more; are enthusiastic about exploiting the learning situations, are more conscious about demonstrating their best to get high grade, praise etc for their performance, have been characterized as having motivation centred learning style. Students with contrary characteristics have been taken as having non-motivation centred learning style.

Aural vs. Visual :

Students who depend on printed or written matter or the like for learning have been classified as having visual learning style. Others who learn best when they hear human voice directly or indirectly have been named as having aural learning style.

Environment oriented vs. Environment free :

Students, if affected by physical environment like heat, sound, light while studying have been identified as having environment oriented learning style. On the other hand students whose learning is not affected by any type of physical environment have been labelled as having environment free learning style.

Flexible vs. Non-flexible :

Students who are not satisfied with the traditionally accepted solution to a learning problem and always try to arrive at unique responses and solutions have been identified as having flexible learning style. Students who are satisfied with traditionally accepted response to a learning solution have been characterized as having non-flexible learning style.

Short attention span vs. Long attention span :

Students who are not able to concentrate on some learning task for a longer duration of time and may need some type of intake to continue work on that learning task, have been characterized as having short attention span learning style. Students who can give long continuous sitting for doing some learning assignment without having any intake or without performing any other activity in between have been named as having long attention span learning style.

Responsible vs. Irresponsible :

When given a learning task, responsible students invariably complete in at the first instance and often do so without direct or frequent supervisions. Those students who seldom complete their learning task in time and that too with direct or frequent supervisions, have been classified as having irresponsible learning style.

Suggestions for Teachers

In classroom the teacher is faced with wide variations among students in their preferred models of thinking, process and acting as well as with the range of their interests, motives, values and aptitudes. The problem is further compounded by the fact that he too has his preferred models of thought and probably gives unwitting stress to them in his teaching, thus, appealing more to some students than to others. The classroom teacher, thus has to be cautious enough to accommodate the learners' needs and characteristics, while planning instruction. Although most educators espouse the goal of tailoring instruction to unique learning needs, individualized instruction has not become a universal classroom practice. Many of the differences noted among individuals are educationally significant and do affect responsiveness to instructional experiences. The 'best' instructional tools, therefore, are those techniques, methods and models that are suited most to a particular student and his teacher in a given classroom setting. Here lies the importance of teacher who has to design an educational programme and who has to select instructional method and material in such a way as to correspond closely to the needs of the learner. The effectiveness of entire process of instructional planning thus, hinges upon the accurate identification of learners characteristics. Unless a teacher can pinpoint exactly "what" a child needs to learn and 'how' he learns most successfully, any attempt on individualized instruction is like a shot in the dark.

In a particular learning situation, the individual is surrounded by a host of potential stimuli. However, he cannot attend to all of them. He responds to them selectively and his particular learning style determines those environmental stimuli to which he attends. Additionally a child's learning style determines specifically his utilization of his intellectual abilities. Thus, each individual is peculiar in the choice of his pattern of learning and therefore, each individual demonstrates a set of new and unique learning styles.

Teaching-learning process involves a simultaneous mutual exchange of ideas and interaction between the teachers and its students where besides the teacher, the learner has to organize himself for work, to do the assigned work, to solve problems and to make decisions which reveal something about his unique style of learning. There are major differences in learning style from one student to another and these differences can have a significant bearing on classroom learning. Researchers have concluded that learning style of students affect greatly the quality of students' achievement. Students' needs, requirements, abilities, capabilities, their ways of learning etc have been neglected for a long time and they were forced to learn same thing, by the same method, by the same person in the same environment. Not only it is important that teachers recognise these diversities in their students, but also it is desirable that they value these styles. Otherwise, even if appropriate strategies are developed and made available to teachers, there may be little demonstrable gain in pupils. Our educational institutions should take into account basic human differences in learning, thinking, etc to seek better means of individualized instruction for more effective learning and as Messick (*1976*) says, "differences in style of learning and thinking also require the attention of educators and researchers. Concern about difference in prior learning and achievement and in social and cognitive development is not enough...." It seems quite evident that student may be effectively characterized in terms of learning styles. Learning styles encompass the perceptual as well as intellectual functioning of a child comprehensively. The information regarding learning styles may also be used for dealing with various issues like evaluation, placement, teaching methods etc, in teaching learning process. It may also help in determining the methods of teaching that are more effective for students with specific cognitive characteristics.

References

Agarwal, Subhash Chandra. Learning style : A new Area of Research, *J. of Edl. Research & Extension*, 17,3,1981.

Agarwal, Subhash Chandra. Student's Learning Style and Contract Activity Package in B. Anand Rao and S.Ravishanker (Eds), *Readings in Educational Technology'* , Bombay, Himalaya Publishing House, 1982.

Agarwal, Subhash C. *Learning Style Among Creative Students*, Allahabad, Central Publishing House, 1987.

Dunn, R. and K. Dunn. *Learning Style As a Criterion for Placement in Alternative Programmes*, Phi Delta Kappan, 1974.

Dunn, Rita and K. Dunn. *Teaching Students Through Their Learning Style*: A Practical Approach. Reston, Virginia, Reston Publishing Company, 1978.

Galloway, Charles. *Psychology for Learning and Teaching*, New York, McGraw Hill Book Company, 1976

Gibson, Junice T. *Psychology for Classroom*, Englewood Cliffs, New Jersey, Prentice Hall, 1976.

Hamachek, Don E. *Psychology in Teaching, Learning and Growth*, Boston, Allyn and Bacon Inc., 1979.

Holt, John. *How Children Learn*, New York, Pitman, 1967.

Laycock, Virginia K. Assessing Learning Characteristics in Robert M. Anderson, John G. Great and Sare J. Odle (Eds.), *Individualizing Educational Materials for Special Children in the Main Stream*, Baltimore, University Park Press, 1978.

Messick, Samuel and Associates. *Individuality in Learning*, San Francisco, Jossey-Bass Publishers, 1976.

Sigel, I.E. and R.H. Coop. Cognitive Styles and Classroom Practice in R.H. Coop and K. White (Eds.) *Psychological Concepts in the Classroom*, New York, Harper & Row, 1974.

Srivastava, Anand P.; Effective College Teaching. '*University News*', 25(3) 1987.

Redefining the Ideals of Education

A.K. Ghosh*

Education is a process involving human beings and every educational act is directed towards an end or goal. Having conceived a synthesis of the individual and the social aims of education, Plato, Socrates' most famous pupil, suggested that its aim is both the happiness of the individual and the good of the state. He opined : 'Education is nature. It can determine whether a nature should be wild and malevolent or rich with benefits to mankind'.

Aristotle also declared that the purpose of education is to produce rational living. The educational system should enable the individual in association with others, to guide his conduct by reason. The highest function of man is to be rational in thought and conduct; highest function of the state is to direct society in the way which effects the greatest good of mankind. The ultimate goal of all education is well-being and well-doing on the basis of sound reasoning.

According to Thorndike, education as a whole should make human beings wish each other well, should increase the sum of human energy and happiness and decrease the sum of discomfort of the human beings that are or will be, and, should foster the higher impersonal pleasures.

Mao Tse-Tung, in his book '*On the Correct Handling of Contradictions Among the People*' states that our educational policy must enable everyone who gets an education to develop morally, intellectually and physically.

In its report *Learning to Be* the International Commission on the Development of Education, stimulates the thinking of educationists for a balanced synthesis between the social and individual goals, when it mentions that the common orientations of the different objectives are scientific humanism, creativity, social commitment and also physical, intellectual, emotional and ethical integration of the individual into a complete man. The individual is to develop as he should, both for himself and his associates. Complex attitudes are indispensable for balanced development of all personality components through education.

With regard to education as a social enterprise the state has the option to have a hands-off or laissez-faire policy. Herbert Spencer viewed that the child must be free to pursue his own self interest in getting education. The aim of the educational policy of laissez-faire is to make individuals more absorbed in their liberty than in their duties, in private economic profit than in civil responsibilities. This policy aims at enabling the strong to enjoy individualism and compelling the weak of suffer in the person.

The adherents of the totalitarian policy of education hold that the state represents the universal and the individual must draw inspiration from the universal to do anything worth while. The USSR, China and other states have assumed ethical as well as political sovereignty in the education of their children. Imitating the Hegelian ideas, the totalitarians aim at making a child a full-fledged man through education for citizenship in a Spartan society. Hitler organised a system of centralised schools on a militaristic basis as a means of solidifying his government, preserving the ancient culture and satisfying the demand of new industrial and economic life of the German nation. Giovanni Gentile, Mussolini's Minister of Education and the author of the reform of education believed that the practical aim of totalitarian education is nationalism. In all totalitarian systems of education heavy emphasis has always been placed upon training for health, dexterity, physical vigour, obedience, service, sacrifice, conformity and a regimented habit of life.

The democratic aims of education authorise a democratic state to base its educational theories and practices on the philosophy believing in equality, liberty and fraternity. The democratic aim is to educate a man as a man, because "man is a man for all that". According to the report *Progressive Education : Its Philosophy and Challenge* of the Progressive Education Association of USA (1941): "The dominant ideals of our democratic culture, continuously reinterpreted and defined, provide the direction for education".

Democrats talk much of human growth and development; they are interested in attitudes, emo-

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tions and interest, the intellectual as well as non-intellectual aims of education. Democratic regard for human dignity pays off in a richer and happier quality of living for all concerned. Teachers and students must have freedom from influences which prevent their stating the truth as they see it. Democratic philosophy of education emphasises the likeness of men rather than their differences. It believes in equality and egalitarianism and teaches that "all men are created equal".

India is on the brink of emotional disintegration. Established socio-cultural values are being questioned. The need of the hour is to propagate the concept of high ideals such as equality, liberty, fraternity, democracy, egalitarianism, secularism, gender equality, social justice among the masses through education. Mahatma Gandhi desired to train through education of three H'S (Hand, Heart and Head). The aim of education must be to help the individual to acquire social efficiency so that he is able to live and let live cooperatively.

Mahatma Gandhi and other nationalist leaders envisaged that it was education which could act as the principal method of developing the spirit of national integration. Believing in the kind of education that could be called national by spirit, Gandhiji founded Gujarat Vidyapeeth and other national universities. He wished that every student of these institutions should be *Brahmachari* and a *Satyagrahi* whose very aim of life be to realise the two fold ends — Truth and non-violence. These would ultimately lead to self-realisation and thinking of an integrated and unified nation.

The first Education Commission was appointed by the Government of India in 1882, which observed. "The declared neutrality of the state forbids its connecting the institutions directly maintained by it with any form of faith; and the other alternative of giving equal facilities in such institutions for the inculcation of all forms of faith involve practical difficulties which are believed to be insurmountable". At the same time the Commission recommended that an attempt be made to prepare a moral text book based on the fundamental principles of natural religion.

After giving a careful consideration to the report of the Commission, the Govt of India in 1884 decided "It is doubtful whether such a moral text-book as is proposed could be introduced without raising a variety of questions...." The position remained to be the same till 1947.

After Independence the Govt of India appointed the University Education Commission in 1948 headed by Dr. S. Radhakrishnan, which recommended that in the degree courses, lives of great religious leaders like Buddha, Confucius, Zoroaster, Christ, Ramanujam, Nanak, Muhammad, Kabir be taught.

The Secondary Education Commission (1952-55) with Dr. A. L. Mudaliar as its Chairman was favourably disposed towards holding of an assembly at the commencement of the day's session with all teachers and pupils present when a general denominational prayer is offered. The Commission further recommended "Moral instruction in the sense of inspiring talks by suitable persons selected by the headmaster and dwelling on the lives of great personages of all times and all claims will help to drive home the lessons of morality".

In 1959 the Central Advisory Board of Education appointed special committee on Religious and Moral Instruction with Sri Prakasa as Chairman. The Committee was all for religious and moral instruction in educational institutions.

The Educational Commission of 1964-66 headed by Prof. D.S. Kothari also felt the need for education on social, moral and spiritual values and generally agreed with the recommendations of the Radhakrishnan Commission and Sri Prakasa Commission in respect of religious and moral education. The Commission suggested that the university departments in Comparative Religions be specially concrned with the way the moral and spiritual values are taught effectively.

The International Commission on the Development of Education (1972) set up by the UNESCO in its report *Learning to Be* also aims at developing the 'Complete Man' and recommends scientific humanism and social commitment as some of the goals of education.

As far as the preamble to the Constitution of India is concerned it solemnly affirms that ours is a secular state, and Article 28 (i) Proclaims that no religious instruction shall be provided in any educational institution wholly maintained out of State funds.

Thus, what is needed is to gear up the system of

(*Contd. on page 13*)

Teachers' Perception of Unfair Means

Y.P. Aggarwal*

College lecturers form a category of teachers who are concerned with teaching at college level where students, after completing high school or senior secondary course, join and are placed under instruction. Since college teachers belong to the academia of the nation they are expected to have some views on various issues concerning education and the examination system. It is assumed that they are good observers of what was happening in the State and have a clear perception on various issues. The main objectives of the exercise were to know the views of college lecturers as to the present state of unfair means; the role of stringent laws to curb copying; acceptance of copying by the society; reasons for copying; and steps required to curb copying. One hundred and eight college lecturers of Haryana were selected from those who have been attending orientation courses at the academic staff college, Kurukshetra University and questionnaire was given to them to elicit their views. Their responses have been tabulated and interpreted in Table 1.

Over two thirds of college lecturers reported that unfair means at examinations have taken an extremely bad shape. They felt that legislation can stop unfair means. Most of the lecturers opined that copying at examinations has not been accepted by the Indian society as a part of its culture. They feel that it should not be legalized in anyway. So far as the acceptance of unfair means as a substitute for teaching is concerned, most of the lecturers feel that unfair means have not been accepted as a substitute for teaching. Regarding an end to the copying at the examinations, only thirty three per cent lecturers are hopeful whereas the remaining lecturers are not optimistic that copying will come to an end after 5-10 years if things are allowed to go on like this.

Causes of Unfair Means

The sixth question was about various reasons for unfair means at examinations. Here college lecturers were asked to rank the items in order of priority from 1 to 6. These were then converted into weights giving a weight of 6 to rank 1 and a weight of 5 to rank 2 and so on upto the weight of 1 to rank 6. The weights then were added up for each reason. These have been presented in Table 2.

The responses of college lecturers show that the most important reason for unfair means at examinations was general political and social deterioration in society. The second important reason was that students are not doing sufficient studies. Out of six reasons asked in the questionnaire the two least important reasons found are lack of teaching and too much emphasis on results as an indicator of teachers' efficiency.

The college teachers have blamed corruption and dishonesty in the society as the major cause of deterioration in education and examinations. The political leaders and the intellectuals have an important obligation to root out corruption from the society and educate the masses to save them from anti-social tendencies.

Steps for Curbing Unfair Means

The seventh question was about various steps for curbing unfair means at examinations. Here college lecturers were asked to rank the items in order of priority from 1 to 6. These were then converted into weights giving a weight of 6 to rank 1 and a weight of 5 to rank 2 and so on upto the weight of 1 to rank 6. These weights were then added up for each item — Table 3.

Table 3 shows that most of the college lecturers gave priority to educate public against copying. Secondly they stressed imposition of anti-copying laws. However, most of the lecturers did not support abolishing of public examinations and giving full authority to teachers for promotion of students. They also opined that improving teaching at school and colleges was not as important a step for curbing unfair means at examinations as the ones given above. Perhaps they are satisfied with the teaching as it is done today.

Conclusion

Unfair means at examinations have taken a very bad shape but these have not been accepted by the society as a part of its cultural ethos. However, they feel that copying in one form or the other is going to

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stay for many years. The two most important reasons of unfair means are — general political and social deterioration of morals in the society and students not doing sufficient studies. They favour negative measures like strict legislation to curb copying; and a positive approach of educating the society against malpractices.

Suggested Readings

1. Gupta, A. K. (1975). *Examination Reforms : Direction, Research Implications*. New Delhi, Sterling.

2. *National Policy on Education*. Ministry of Human Resource Development, 1986.

3. John. V. V. Exams without walkouts : Easy answer to tough questions. *Times of India*. August 29, 1977: 6: 3-5

4. Padamanabhan, N. S. Examination : A bottleneck in education. *Educational India* 30 (10), April 1964 : 375-76.

5. Taylor, H. J. An Examination of Examiners: A Study of Reliability of Examination Marking, *Journal of the University of Gauhati*. 13(2), Science, 1962.

6. Natarajan, V. Examination Reforms, Programmes and its outcomes. *University News*. 14(1), January 1976 : 22-23, 25.

7. Natarajan, V. Where does the core of examination reform lie ? *Hindu* January 11, 1975.

8. Bayti, Jamnalal. Examination system : A View Point. *Education* 48(7), July 1970 : 5-14.

9. Shamsuddin. Reform in the system of examinations. *Educational India* 35(11-12), May-June 1969 :366-69.

10. Sharma, J. N. Examination reform: UGC plan of action. *University News* 15(4),1977 : 1, 94.

11. Srivastava, H. S. Some conceptual variations in examination reform. *Indian Educational Review* 12(1), 1977 : 1-10.

12. University Grants Commission. *Examination Reform — A plan of action*. New Delhi, 1976.

13. Harper, A. Edwin, Jr. Mass copying—a remedy. *Teacher Education* 4(1), January 1960 : 37-38.

Table 1 - General Questions on Unfair Means

Question Number	*Description*	*Responses*			
		Yes		No	
		f	%	f	%
1.	Have the unfair means, at examinations taken an extremely bad shape?	72	67	36	33
2.	Can legislation stop unfair means?	72	67	36	33
3.	Has copying at examination recently been accepted by Indian society as a part of its culture and hence should be legalized?	4	4	104	96
4.	Have teachers accepted unfair means as a substitute for teaching?	8	7	100	93
5.	Are you hopeful that copying will come to an end after 5-10 years?	36	33	72	67

N = 108

Table 2 - Causes of Unfair Means as Perceived by College Lecturers

Question Number	*Description*	*Weights*	*Ranks*
6.	What are the important reasons for unfair means at examinations? Give priority number from 1 to 6.		
	1. Lack of teaching	168	6
	2. Lenient punishments	356	4
	3. Too much emphasis on results as an indicator of teachers' efficiency	288	5
	4. General political and social deterioration in society	548	1
	5. Students are not doing sufficient studies	504	2
	6. Cut-throat competition for jobs	364	3

N = 108

Table 3 - Steps for Curbing Unfair Means as Perceived by College Lecturers

Question Number	Description	Weights	Ranks
7.	Rank the following steps for curbing unfair means in order of priority (1 to 6)		
	1. Abolish public examinations and give full authority to teachers for promotion of students.	232	6
	2. Impose anticopying laws	436	2
	3. Abolish consideration of result in teachers ACRs	384	4
	4. Reward examinations supervisory staff for excellent work	424	3
	5. Educate public against copying	452	1
	6. Improve teaching at schools and colleges	368	5

N - 108

Redefining the Ideals of Education

(*Contd. from page 10*)

education to bring about a sense of fellow-feeling in tune with the National Integration Conference Report of 1961, which mentioned that "national integration is a psychological and educational process involving the development of a feeling of unity, solidarity and cohesion in the hearts of people ...."

However, the course relating to human value based education to concentrate on the essential socio-cultural values such as truth, righteousness, service, sacrifice, unity, harmony and co-operation is quite in consonance with the New Education Policy underlining the need for value education. "In our culturally plural society, education should foster universal and eternal values, oriented towards the unity and integrity of our people. Such value education should help eliminate obscuranticism, religious fanaticism, violence, superstitions and fatalism". Also, it carries the significance of the recommendations of the Beg Committee (1985-86), constituted with a view to involving the university system in the promotion of the process of national integration through its teaching, research and extension activities.

Human and cultural values such as love compassion, sacrifice, non-violence need to be propagated. Value education may include Radhakrishnan's 'Idealistic View of Life' and Marx's opinion that 'Religion is the opium of the masses.' It may be mentioned here that although morally generally emanates from the religious sources, yet godless morally is also possible. Russel advocated the "Necessity for Atheism" and men like Huxley and others pointed out the baneful effects of religious beliefs. These messages with emphasis of values on socially gravitational behaviour, development of human qualities and welfare of mankind as a whole should supercede the evil forces jeopardising the integrity of the nation.

Language — The Autobiography of a People

Prof. A. Gnanam, Vice-Chancellor, Pondicherry University, delivered the Convocation Address at the fifth convocation of the Potti Sreeramulu Telugu University. He said, "It has been rightly said that language is the autobiography of a people. Telugu reveals the joys and sorrows, hopes and fears, dreams and aspirations of the Telugu people in its vast corpus of literature. Its literary flowering begins with a rich variety of folk songs including philosophical songs, devotional songs, labourers' songs, women's songs and ballads." Excerpts

Ours is a nation with hundreds of dialects spoken by the people. However, eighteen languages are recognized by the Indian Constitution, and there are a few more which can also be justifiably proud of a sizeable literature. Now it is rightly claimed by the Indian scholars that "Indian Literature is one even if it is written in about twenty languages". Though every one of these literatures is homogeneously linked with the language in which it is written and conditioned by its milieu, and though everyone of these languages has its own unique features in terms of form, style, symbols and nuances, we can recognize certain common characteristics which reveal their Indianness. Dr.S. Radhakrishnan, in his foreward to Sahitya Akademi's publication, *Contemporary Indian Literature* observes:

> *"There is a unity of outlook as the writers in different languages derive their inspiration from a common source and face more or less the same kind of experience, emotional and intellectual".*

Histories and critical surveys and the English renderings of the masterpieces in our classical and modern languages reveal the unmistakable similarities that are due to common religious, political and social ideas. If, in the past, Sanskrit served as a source of inspiration to all the Indian languages which drew liberally upon the *Vedas*, the *Upanishads*, the *Ithihasas* and the numerous *Puranas* English provided the thought-currents and forces in the modern period. Many writers though writing in different languages operated on the same wavelength because Hinduism, Budhism, Jainism, Islam and Christianity served as the connecting links at different periods of Indian history. Subramaniya Bharathi, one of the great inaugurators of modern Indian poetry, was not overemphasizing the unity in diversity when he said that though *Bharathamatha* had thirty crores of faces she had a single unified thought. Just as the many wicks of the traditional Indian Brass lamp produce one light, all our languages have produced one literature.

All this does not mean that the national identity of Indian literatures has been established completely and beyond doubt and that the provincialism of our scholars and critics has completely disappeared. There is a long way to go and our researchers and men of letters should engage themselves in the arduous task of meaningful search for 'a common denominator' and provide an integrated picture of Indian literature. The scholars associated with the Potti Sreeramulu Telugu University must have a savant like Suniti Kumar Chatterji as their model and follow in his footsteps remembering that he, as a pioneer, put his heart and soul into an objective study of Indian literature.

The greatness of Telugu and its literature has been acknowledged by its rivals as well as by its admirers. Sundaram Pillai and Bharathi, who were known to be passionate lovers of their mother-tongue, speak of the charming Telugu and its mellifluousness in profusely eloquent terms. The soul-animating Telugu *kirtanas* of Thyagaraja continue to retain their perennial appeal in numerous Tamil houses and concerts in different parts of Tamilnadu. Telugu, one of the major Dravidian languages, having close geographical contact with the South Dravidian subfamily from a distant past, branched off as a separate language sometime between the 12th and 9th centuries B.C. long before many western languages attained their distinct identity. Though an ancient tongue, it has been growing from strength to strength and is successfully facing the challenges of modern times. With its tremendous capacity to absorb words from other languages whenever required and its potential to generate terms that the present developments in science and technology demand, it has proved to be a remarkable medium of literature, instruction and administration.

It has been rightly said that language is the autobiography of a people. Telugu reveals the joys and sorrows, hopes and fears, dreams, and aspirations of the

Telugu people in its vast corpus of literature. Its literary flowering begins with a rich variety of folk songs including philosophical songs, devotional songs, labourers' songs, women's songs and ballads. Even illiterate rustics gave expression to philosophical truths in songs called *'tattvaalu'*. In one of the songs for instance, a cowherd asks, *'Where has the bird gone, brother? The nest looks deserted'*. The songs of the mystics of 16th and 17th centuries preached *Rajayoga*, devotion to guru, social reforms, non-violence and detachment and attacked the caste system. The Telugus' folk-drama consisted of several performing arts ranging from *Yaksagana*, *Kalapam*, *Kuravanji* and *Vithinatakam*, to *Harikatha* and *Bommalata* of puppetry. Art historians are of the view that it was from Andhra Pradesh that puppetry spread to Indonesia, Malaysia and Thailand and from there to Africa, Greece and Macedonia.

The Telugu literature is reflected in the marvellous poems, composed by renowned scholars and poets of Andhra. To mention a few, *Nannayya*, *Tikkanna*, *Erraprragada* form the Kavitraya of the Telugu literature. Others of equal literary calibre were, Kandukuri Veeresalingam, Pantulu, Gurajada Appa Rao and in recent times Sri Sri and others. They have reflected in their writings, all that is noble in one's life.

It was Gurajada Appa Rao, who wrote the immortal poem which reads thus :

> *"Desamunu preminchu manna*
> *manchi annadi penchu manna*
> *Desa mantc mattikadoy*
> *Desa mantc manushuloy"*
> (Love your country
> promote goodness in all its nobility
> country is not just a land
> country means people)

Can there be greater teaching than this! — a patriotic fervour is beautifully brought out by the poet.

Modern Telugu poetry is as rich and varied as that of the past. Its emergence has been caused by the spread of mass education, the national movements, the social reforms and the mass media all of which have aroused a nationwide social consciousness in favour of the poor and depressed. Kandukuri Veeresalingam Pantulu, the father of Modern Andhra, is the first writer who employed literatures as a weapon to eradicate social evils. Gurajada Appa Rao, who is considered the first modern Telugu poet, rejected the traditional metres, used a new indigenous metre and presented in his poetry a new vision charged with a universal outlook. In a poem on a comet, Gurajada declares :

> *If the whole world becomes one*
> *house*
> *If racial distinctions vanish*
> *If on limitless bonds of love*
> *blossom joys*
> *all religions will then disappear.*
> *Wisdom*
> *only will shine with brightness;*
> *the*
> *so-called heavenly comforts*
> *alight on the earth.*

Like Subramaniya Bharathi, the first and greatest of modern Tamil poets, Gurajada is now rightly hailed as a people's poet.

The progressive movement in the modern Telugu poetry, treating the traditional rules of prosody and imagery, has ushered in an era of free verse. Sri Sri, spearheading the movement, spoke of

> *crossing the burial ground like*
> *dictionaries*
> *freeing themselves from the*
> *shackles of grammar*
> *and giving up the serpent-*
> *embrace of prosody.*

Poetry has now freed itself from the clutches of privileged classes and become an effective tool for propaganda.

As a result of this kind of development Telugu has become a supple medium. But the champions of our regional languages including Telugu, Tamil, Malayalam, Kannada and others should realise that while congratulating ourselves on our past achievement and on our ancient tradition, we should move on. The need of the hour is to make our languages fit media of instruction in the context of rapid developments if the realm of science and technology. They should catch up with the fast developing Western languages like English, French and German if they are to enrich us in both literal and cultural terms. The competition from English is stiff and frightening and we can't afford to ignore our society's progress. This does not mean that we have to abandon our languages; but since they are certainly capable of rising to the occasion, given their glorious past we must strive hard to enrich them so that they may face the challenges of modern times and serve as effective tools guarantying scientific progress and allround development. The languages as a medium shouldn't be a hindrance but a help. It shouldn't take us back to the agrarian era but carry us forward to the scientific future. With this aim in mind the Telugu scholars of this university should, with missionary zeal, undertake to work for the language on many fronts, but I will restrict to three, which in my opinion are very important.

In order to provide the current of ideas required for the enrichment of Telugu literature, they should concentrate on Comparative Literature and Translation. Comparative studies of Indian literatures should be taken up not to set one literature against another leading to meaningless squabbles but to bring to light their fundamental unity. Prof. T.P. Meenakshi Sundaram made many prize discoveries relating to the literary relations between Tamil and the other Dravidian languages. He could identify many of the stories of Tamil *Nayanmars* found in Kannada, Telugu and Marathi and point out that *tohra, sisa padyam* and *tripadam* are different types of musical compositions which Tamil got from Telugu and Marathi. He suggested that the poems of Tamil *Siddhas* be studied along with the *Vacanagalu* in Kannada and Vemana's *Padyas* in Telugu. More elaborate studies of this type by the present generation of scholars are bound to be extremely rewarding.

The second effort should be in enriching the languages as a vehicle of communication in the contemporary era. Somehow, while we progressed hand in hand with the successive social transformations enriching our culture, language and traditions, our language had not developed as a medium of communication beyond the agrarian era. It may be due to the fact, that we as a nation were not even the participants of the efforts that had ushered in the industrial era or the subsequent science based technology era. However through the Western influence, we have the fruits of industrialization and Science and Technology. Our languages should be developed with the creation of new words and idioms to communicate in the contemporary era.

The third era that demands equal attention pertains to Telugu as a language of the common man, as a tool of communication and as a literary language. Research and field work have to be taken up on a war-footing so that the vocabulary of the common man may be enriched considerably and Telugu may serve as a successful medium of science, "understanding", instruction.

In this context, I feel that we should develop a functional Telugu dictionary mainly for the use of our rural community in the context of their contemporary life. Now they are in the midst of a changed life style consequent to the impact and technology and diversified trade and commerce. We should prepare this dictionary in consultation with the sociologists, demographers and linguists and in that process coin new words, if necessary. Using this and other such concrete steps, we should reach out with the assistance of suitable media and increase the vocabulary of the common man in the rural community. With this enhanced vocabulary, his creativity will be for more than the folk literature they had generated with the limited vocabulary. The language in turn will get enriched by their enhanced contribution.

The scholars leaving the portals of this University should have the courage and confidence of the Telugu poet, Singaracharya, who in his poem *Navya Srusti* (The New Creation), declares his determination to create a brave new world :

I'll in man's mind
Turn the darkness into light
I'll turn this space into a
golden cup of nectar.
I'll change everything.
I'll mould a new world
And start a new region
I'll fill the corpse of humanity
With life anew
A new world with one religion
Endowed with true knowledge
I'll mould it into a paradise
free of narrowness
Sure I'll create a new world.
And rule, wait and see !

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Science Congress Meet in Delhi

Prime Minister Shri H.D. Deve Gowda called upon Indian scientists to hit back at attempts of advanced countries to deny frontier technologies to India. While meeting the global challenges in the frontier areas of technology, scientists should also ensure that these are made available to users at affordable prices. He was inaugurating the 84th Indian Science Congress at the Delhi University recently.

"Technology denials are widening the gap between developing and developed nations, and Indian scientists should find suitable effective alternatives to tackle the barriers being created by the West", he said. The country should also be careful that obsolete and environmentally harmful technologies that were being phased out elsewhere were not passed on to developing countries in the name of technology transfer, the Prime Minister cautioned.

"To prevent this, there is a need for a technology information system that can help policy makers adapt the right technologies for national use.

Networking among scientists, engineers, community leaders, communicators, administrators and ultimate users is essential for meaningful application of science in the country.

Active interaction with the users is needed for better understanding of the socio-cultural milieu in which they operate", Mr Gowda said.

A responsive leadership that encourages youth and new ideas, development of high skills and networking across disciplines were essential for meeting future challenges, he stressed.

Citing the example of the success of the green revolution in the country in the 60's, the Prime Minister said it worked well because of cultural and linguistic affinity between technology extension workers and farmers.

Mr Deve Gowda reminded scientists that frontier areas of science should play a major role in solving basic problems such as safe drinking water, primary health, primary education and housing.

For example, supercomputers could provide valuable information on weather conditions to farmers while remote sensing satellites could yield useful information on natural resources and forest cover.

Programmes of the department of biotechnology find use in developing immunological drugs, in genetic engineering, high-yield agriculture, animal husbandry and eco-friendly pesticides and fertilisers.

The appropriateness of various technologies to local needs, particularly with regard to top socio-economic impact, had to be studied before recommending technologies, he said.

Mr Gowda urged scientists to lay special emphasis on technologies that convert wastes into alternative energy sources and recycled water. India should ultimately become a generator and exporter of technologies, he added.

The government welcomed the role of business houses and industry in acquiring technological strength through investment in R and D.

Observing that in the changed global scenario, power came from ability to access, network and adopt technologies, he said India should integrate its local skills with the new system.

Dr. S.K. Joshi, president of the Science Congress, in his address elaborated on the theme of the meet "Frontiers in Science and Engineering and their Relevance to Natural Development".

Dr Joshi warned that decline in funding for scientific research was widening the gap between India and the West in frontier areas of science and the "situation will worsen if early effective steps are not taken".

The reduction in research and development funding is a "short-sighted policy" that will "weaken the country devastatingly in the long run", Dr Joshi said in his address to the six-day meeting.

An atmosphere of "doom and gloom" was prevailing in most of the Indian universities, the real homes for advanced research and training and play an invaluable role in educating young scientists, Dr Joshi, former director general of the Council of Scientific and Industrial Research, said.

In recent years, Indian universities were being plagued by shrinking funds, a virtual absence of quality standards and a lot of interference from outside sources. If Indian science had to prosper, the country should strengthen the university system and increase budgetary support to science education.

India's expenditure in R and D had come down to 0.89 per cent of gross domestic product (GDP) from 1.1 per cent. This was in contrast to countries such as South Korea which plans to increase its R and D spending to over five per cent of GDP, and China which plans to treble its R and D investment from 0.5 to 1.5 per cent of GDP by 2000 AD.

To be internationally competitive, India should increase its R and D funding to at least 1.5 per cent of its GDP and focus its efforts on a few selected programmes and projects, while industries should invest much more in R and D than what they are doing today, Dr Joshi said.

It was necessary that scientists were close to decision making, he said, suggesting the formation of an apex advisory committee on science and technology which could provide the Prime Minister a scientific analysis of issues connected with sustainable indigenous development based on science and technology.

The country should use its high-quality manpower and massive R and D infrastructure to become a leader in a few chosen areas of technology, Dr Joshi stressed.

Observing that science, engineering and economy constituted a connected network, Dr Joshi said countries such as South Korea, Taiwan, China, Hong Kong, Indonesia, Malaysia and Singapore, which were making rapid economic progress, were also encouraging science and technology.

India should view the emergence of globally competitive technologies as a matter of national concern because "ultimately it is technology which accounts for a major share of economic growth".

Besides technology, other factors such as the attitude of the industry, political leadership, capital and education also contributed to national growth and development, Dr Joshi said.

Because of excessive and complacent dependence on foreign technology by Indian industry, science and technology had played only a marginal role in industrial development and created a wrong notion that a larger investment in R and D was not going to yield results.

Multinational corporations which sold technologies to India at great profits may have a vested interest in promoting such a thinking, the Science Congress president said.

"Indian industries should venture into a few cutting edge technologies and aim at reaching the pinnacle of technological sophistication and ingenuity", he added.

The Science Congress president pointed out that whenever the country faced a challenge and was backed by political will and support, Indian science and technology had done well.

One of the most striking examples was the green revolution in the 60s which enabled India to become self-sufficient in foodgrain production.

India had made significant strides in the space sector, particularly in launching satellites and remote sensing, nuclear technology, information technology, high temperature superconductors, biotechnology and biomedical research. However much more needed to be done, he cautioned.

The country should expand its nuclear power programme and research further in advanced heavy water reactor systems and fast breeder reactors. It should also give due emphasis to new technologies for solar and hydrogen energy. India was at an advantage with respect to sunlight and solar energy could be a supplementary source of energy.

India should develop a national information infrastructure, where using phone lines, cables and high-speed data networks, one could allow open access to the information superhighway. All Indian universities and laboratories should be connected to this information superhighway, so that researchers could have access to important research journals. Based on the rich traditional knowledge of herbs and indigenous systems of medicine, India could produce herbal products and plant-based drugs which could have a huge international market.

Delhi Chief Minister Mr. Sahib Singh, who released the souvenir on the occasion, said : "The individual's development is an index of the nation's development. But, the progress of science and technology should not lead to the mechanisation of man. I appeal to the scientists to think in this direction too".

The vice-chancellor of Delhi University, Prof. V.R. Mehta, in his welcome address, said lack of financial resources for modernising laboratories was causing a sense of disquiet in Indian universities.

Inflation, increased competition and improved prospects in trade and commerce were making students lose interest in science, he said.

Human Resource Development Minister Mr. S.R. Bommai, who inaugurated an exhibition organised on the occasion, said India should accord the highest priority to solar energy programmes and modernise agriculture.

The Prime Minister also gave away awards to five eminent scientists for their outstanding contributions in science and technology.

Dr. Raja Ramana, former chairman of the Atomic Energy Commission, was conferred the Ashutosh Mookerjee Memorial Award for 1996-97 for his contribution in the field of nuclear physics.

The C.V. Raman birth centenary award was bagged by Professor Devendra Pal from Scrips Institute of Oceanography in the United States for his work in nuclear physics.

Prof. C.K. Majumdar of S.N. Bose National Centre for Basic Sciences, Calcutta, was conferred the S.N. Bose birth centenary award for his contribution in the field of solid state physics.

The S.K. Mitra birth centenary award was given away to Prof. U.R. Rao, member, Space Commission, for his work in the field of space science and space technology.

Dr. V.L. Chopra of the National Resource Centre on Plant Biotechnology, Delhi, received the Birbal Sahni Memorial Award for his outstanding work in genetics and crop improvement.

The Srinivas Ramanujam Birth Centenary Award was not presented this year.

Speaking at the plenary session, the Chairman of the Atomic Energy Commission, Dr. R. Chidambaram said there were clear "alarm signals" that not many youngsters were taking up a career in research and development, especially physics and mathematics.

Prof. M.G.K. Menon, one of India's key science policy planners and a former minister of state for science and technology, said, "When the recent governments are not interested in science, why blame the young?"

Some took up science for medicine and engineering, while others for an MBA or the civil services. Few remained to pursue research as a career, said Prof. Menon.

According to Dr. Chidambaram, the government should make emphatic statements in support of science and make R & D careers attractive through substantial hike in fellowships and research grants and guaranteed career profiles. "The most talented people in science should have a career comparable to an IAS officer," he added.

Dr. V.S. Ramamurthy, Secretary, Department of Science and Technology, said that this lack of interest will have an adverse impact in the long run.

Unlike in the US where science graduates could start their own business, few students in India were aware of the options open for them. Also, a person could not take a break from a science career and return to it after a few years, like in the West.

Prof. V.R. Mehta, Vice-Chancellor, Universityof Delhi, cited inflation and increased competition, combined with better prospects in commerce, trade and industry, as the reasons for students losing interest in science.

These developments appeared to threaten ability of a university to play an effective role in development of science in general, he added.

"Once the reservoirs of talent dry up, it will be very difficult to sustain scientific research," he warned.

Superior technologies needed superior minds which could be developed only if science departments of universities were able to attract and retain good talent, he added.

Over 3000 scientists from all over the country and about 50 from abroad participated in the Congress at which 1600 research papers were presented during six plenary sessions.

IGNOU's Decade of Development

The Indira Gandhi National Open University (IGNOU) plans to link all the open universities in the country into a major educational network in the Ninth Plan period. This was revealed by the Vice-Chancellor of IGNOU, Prof. Ram G. Takwale in New Delhi recently. He said distance education had gained roots in the country and was now being seen as a viable alternative to the formal system of education. This, he said, was evident from the growing number of open universities in the country today.

"When IGNOU was set up in 1985, it was only the second institution after Andhra Pradesh Open University to offer distance education. Today, there are six more — Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan — and in the next five years another 10 will be set up at different State levels".

According to Prof. Takwale, IGNOU had also gained international recognition during its decade-long existence. The Commonwealth of Learning (COL) instituted the Rajiv Gandhi Fellowship Scheme to train 100 distance educators from 14 developing countries of the Commonwealth by enrolling them in IGNOU's Distance Education Programme.

Similarly, he added, the learning packages produced by IGNOU had gained international attention and the open learning institute (Hong Kong) had acquired course materials from IGNOU for its management and English teaching programmes. Also, the Commonwealth of Learning has acquired 27 video programmes produced by IGNOU for distribution among developing countries, he said.

Steps had also been taken to promote global access to IGNOU's programmes and services, Prof. Takwale said. It was for this very reason that enrolment of Indian expatriates in regions with a significant concentration of Indians was being encouraged, he said.

The University also proposes to establish partnerships with selected institutions outside the country for launching its programmes therein. Such arrangements are currently under negotiation with institutions and organisations in the Gulf Region, South-East Asia as well as Indian Ocean Island Nations like Seychelles and Maldives.

Stating that IGNOU has to address the continuing education needs of a vast majority of working people in the country as well as those sections of the community who require opportunities for education and training for their own enrichment and empowerment, Prof. Takwale disclosed the specific measures the University had initiated to address these needs.

With this end in view, IGNOU has launched a training programme for elected functionaries of Panchayati Raj institutions throughout the country; a mass training programme in computer applications for the uninitiated; continuing education for management development; training of primary school teachers; vocational education of tannery workers; and IGNOU-industry partnership for in-service training of construction industry personnel.

Computer Courses at Delhi University

Delhi University Vice-Chancellor Prof. V.R. Mehta announced the introduction of Bachelor degree courses in computers and the installation of state-of-the-art computer servers with 80 pentium nodes with LANS costing Rs 2 crore.

Among the spin-offs of the new courses would be the installation of a big dish antenna at the Central Science Library. This would be accessible to all university departments through a campus wide local area network. Other universities and remote locations around the country could also access the network. All the 18 libraries of DU were being computerised, Prof. Mehta said.

The new courses, Bachelors in Computer Application (BCA) and BSc (Hons) in Computer Science would help the youth of the Capital. The courses will start from the next academic session.

Prof. Mehta said the university would honour two of its outstanding scientists by naming a hostel on the North Campus after Prof. D.S. Kothari and the Life Sciences Building (South Campus) after Prof. B.K. Bachawal.

Prof. Mehta said an Institute of Informatics and Communication had been set up in South Campus where a Master's programme in Computer Communication and Networking would commence in the next academic session.

These courses would be supported by firms and industries dealing in computers and information technology, and the benefits would be mutual.

The VC said that the establishment of BR Ambedkar Centre for Biomedical Research, in collaboration with some universities of the US, Canada and Germany and Indian industry, had provided an impetus to research in DU.

Refresher Courses in Functional English

The Regional Institute of English, Chandigarh, in collaboration with the University Grants Commission, organized two Refresher Courses in Functional English in the Vocational Stream at the undergraduate level for college lecturers. The lecturers were drawn from Coimbatore, Mysore, Cuttack, Arunachal Pradesh, Calcutta, etc.

The first course was devoted to the syllabus for B.A. II, while the second course was devoted to the syllabus for B.A. III and the syllabus followed was the one prescribed by the UGC, with minor modifications to cater to the regional needs of the participants.

The course I focused on Conversational English, Writing as a skill, language in the context of society, and the imaginative features of language.

The conversational English centred round a discussion of the Registers and Functions of Spoken English and the interactional and transactional tests that form a potent medium for testing conversational English.

Writing focused on both the mechanics of writing and the different modes of manipulating the language to convey subtle nuances of meaning.

The nature and relevance of language in relation to society focused on the notion of standard language and the dynamics of the process of communication in the context of social relationships.

Interviews for print media, radio and television, field interviews and formal studio interviews formed another important feature of the course. The characteristics of newscript writing in relation to grammatical structure, registers and style also figured prominently. Panel discussions centred primarily round the opening and closing gambits of conversation and the ways and means of maintaining a panel discussion.

Course II was devoted largely to a discussion of Entrepreneurship Development, On-the-job training, Project writing and TV/Radio Broadcasting. Resource persons were invited from renowned institutions like EDIC and TTTI, who together with the faculty of the RIE, discussed Entrepreneurship Motivation and Development, Opportunity Sensing and Industrial Sensing.

The concept, relevance and procedures of On-the-job training as also the criteria for selection of work station and the preparation of organizational and student profile were thoroughly discussed.

How business English has moved away from the verbose substance that it earlier was to simple English of everyday life was taken up as an interactive activity.

Commentary, Documentary film script were the other topics taken up. The discussion focused largely on how the tone of the commentator and the use of associative material affected the quality of the commentary. As a part of the documentary film script, the story board of a film script was presented. Dr. J.S. Chari and Dr. Hemant Joshi of the Indian Institute of Mass Communication gave a demonstration on the facial expressions and gestures one needs to cultivate to be able to face a TV camera.

Another area taken up for discussion was the relevance of voice-training not only as a transmitter of information but also as a facilitator for language development and effective language use.

Stamp on Roorke University

The President, Dr. Shanker Dayal Sharma, released a commemorative postage stamp at a function organised recently at Rashtrapati Bhawan to mark the sesquicentennial celebrations of the University of Roorkee. Mr. Beni Prasad Verma, Union Minister of Communications, presented the special album of stamps to the President.

Dr. Sharma recalled the role played by the University in the development of technical education in India and said the stamp was a tribute to all those whose efforts over the past 150 years had made the University of Roorkee a benchmark in technical education.

The stamp depicts the majestic main building of the University constructed in renaissance style in 1852. This occasion epitomises the entry of the country into the 150th year of teaching of technical education.

From a modest beginning 150 years ago, the university which now has 25-academic departments/centres and a devoted faculty of about 500 lays emphasis on the overall multifaceted development of personality. It is considered a trend-setter in the area of education and research in the fields of science, technology and engineering and tops in the coveted sector employment ranking.

During the year-long celebrations which began from November 26, 1996, a large number of academic and professional activities involving the entire university community and the alumni are planned.

Mr. Romesh Bhandari, Governor of Uttar Pradesh and Chancellor of the University, recalled past achievements of Roorkee University to rededicate itself to meet the future challenges.

Prof. N.C. Nigam, Vice-Chancellor, recalled the contributions made by an array of distinguished alumni and assured the gathering of the firm resolve of the university community to take up future challenges with renewed vigour.

B.C. Guha Memorial Lecture

"More babies with low birthweight are born in India every year, mainly due to iron deficiency, which includes reduced stamina, reduced IQ, maternal mortality and impaired immunity", said well-known nutritionist and biochemist Dr. M.N. Bamji, who was working with the National Institute of Nutrition, Hyderabad. He pleaded passionately that scientists, especially agricultural scientists, should stop looking down upon nutrition as a low-brow science. Dr. Bamji was delivering the 34th B.C. Guha Memorial Lecture at the 84th session of the Indian Science Congress that concluded recently in New Delhi. The theme of her lecture was "Micro-nutrient Hunger . A Food for Thought and Agenda for Action".

According to her, the agricultural scientists only looked into protein and calorie deficiencies, whereas the real problem lay in "micro-nutrient deficiency", which consisted of vitamin and mineral deficiencies. "This deficiency", she said, "was a silent hunger which eats away the body system".

Recent researches have revealed that iron is involved in neuronal development, a key factor in healthy growth of the brain system. It is for this reason that iron deficiency was related closely with low IQ.

The sad state of nutrition in the country was reflected in the anti-woman attitude in the society.

This could be traced back to the neglect of pregnant woman, who did not get enough food even during the crucial months of pregnancy.

Another micro-nutrient factor was that of iodine deficiency, which led to abortion, still births, cretinism and psychomotor deficiency. Clinical cretinism, she said, was defined by deaf-mute, mentally retarded, physically-stunted condition of children.

Population of the cretins in India was at a staggering figure of 2.2 million, she added.

Micro-nutrient deficiency, she revealed could be bridled through a better management of vitamin and mineral-rich diet. The need was to identify regional sources of vegetables and fruits which were rich in these elements.

Fruits like apples and pomegranates are not as good as papayas and wild dates, whose consumption should be encouraged. Bamji also suggested that local varieties of leaf vegetables, which were found in abundance in all parts of the country, needed to be identified for their mineral and vitamin content.

PG Diploma in Human Rights & Peace

The Annamalai University has started a Postgraduate Diploma course in Human Rights and Peace with effect from 1997-98. For admission to this course the candidates should have qualified for a Bachelor's Degree. The duration of the course is one year. The course of study includes : (1) Philosophy and Ideology of Human Rights; (2) U.N. & Human Rights; (3) India and Human Rights; and (4) Humanitarian Law and Peace.

Modern Technologies for Information Handling

The B.B. Dikshit Library of the All India Institute of Medical Sciences, New Delhi, proposes to organise the Second National Training on Modern Technologies for Information Handling on 24-28 February, 1997.

The training is designed to benefit the Librarians, Information specialists, Documentalists, R&D Scientists, Teachers in Library Science, Health Scientists, and Computer professionals from Universities, Academic, Engineering, Medical, Public, School and Government Libraries, Public Sectors, CSIR Labs and National Laboratories.

The course contents include : Library Automation; On-line Searching; CD-ROM and CD Networking; CD-ROM Database; Virtual Libraries; E-Mail Services; Bar-code Technology; Multimedia; Telecommunications and Library Networking; Electronic Publishing; and Internet, etc.

Further details may be had from Dr. R.P. Kumar, Coordinator, National Training Programme, C/o B.B. Dikshit Library, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110 029.

IGNOU Tie-up with GJU

Indira Gandhi National Open University is reported to have signed a Memorandum of Understanding with Guru Jambheshwar University, Hisar, for conduct of management, computers and engineering technology courses. The new courses are expected to be onstream by April this year and the students pursuing these courses will be awarded the degree jointly by IGNOU and GJU.

Prof. Ram G. Takwale, Vice-Chancellor, said the IGNOU which had completed a decade, will have to address the continuing education needs of a vast majority of working people in the country.

It planned to launch a mass training programme for elected functionaries of panchayati raj institutions throughout the country.

The university would also have programmes for mass training in computer applications for the uninitiated, continuing education for management development, training of primary school teachers, vocational education of tannery workers and IGNOU-industry partnership for in-service training of construction industry personnel.

He said the IGNOU was meeting 75 per cent of its costs through funds generated from fees.

Visiting Professorship for Har Gobind Khurana

Noble laureate, Prof. Har Gobind Khurana, has been appointed visiting professor of Delhi University's Dr. B.R. Ambedkar Centre for Bio-medical Research. A decision to this effect was taken at a recent meeting of the University Executive Council.

Prof. Khurana is currently a Sloan Professor in the Department of Biology and Chemistry at Massachusetts Institute of Technology.

News from Agricultural Universities

Grodzinsky Award

Dr. S.J.H. Rizvi and Dr. (Mrs) V. Rizvi of Rajendra Agricultural University, Samastipur (Bihar) have been conferred the prestigious Grodzinsky Award by the International Allelopathy Society (IAS) for their book entitled, "Allelopathy : Basic and Applied Aspects", published by Chapman and Hall, London. The award was presented to Drs. Rizvi by Prof. G.R. Waller, President of the IAS at Cadiz, Spain during the First World Congress of Allelopathy. The Congress was attended by 400 delegates representing 43 countries.

Drs. Rizvi are working as plant physiologists and are active in the field of allelopathy for about 20 years. Allelopathy is a newly emerging area of research which covers the biochemical interactions between all kinds of plants. The phenomenon of allelopathy or the chemicals (allelochemicals) responsible for this, are of great importance for agriculture, forestry, agroforestry, horticulture and environmental problems. Agricultural practices based on allelopathic considerations would bring down the cost of cultivation on one hand and would greatly reduce the use of harmful pollutive and synthetic pesticides/fertilizers on the other hand.

Sports News

New Records at Inter-Varsity Athletic Meet

Delhi University's Hardev Singh (shot put) and Jaitender Singh (pole vault) established meet records in the All India Inter-University Athletic Meet which concluded recently at Gwalior.

Delhi University won three gold medals, two silver and two bronze in the competition in which the Kerala and Calicut universities claimed the men's and women's team championship title, respectively.

Hardev Singh, a student of Moti Lal Nehru College, cleared 17.13 metres in shot put, erasing the existing mark of 17.04, set by Jasbir Singh of MD University in 1993-94.

Jaitender Singh of Aurobindo College cleared 4.30 metres in pole vault to remove the old mark of 4.19 (Davinder Singh of MD University, set in 1993-94).

The third gold for Delhi University was fetched by Suresh Kumar (MLNC) who threw the discuss to 50.66 metres.

The two silver medals for Delhi came through efforts of Yogesh Kumar (MLNC) in shot put (15.28m) and Avnish Manne (DCAC) in 100m in 11 seconds.

Avinash Manne also bagged a bronze when he finished third in 200 metres with a time of 22.8 seconds.

The other bronze for Delhi came when Satbir Singh (Sri Aurobindo College) finished 20-km walk in one hour 41.0 sec.

Rakesh Paul (Kerala) and B Pandeshwari (Madurai) emerged the best individual athlete in the men's and women's section, respectively.

Mohammad Malik of Annamalai University bagged the gold in men's 100m, while Rakesh Paul came first in men's 200m. The women's 200m was won by B. Pandeshwari.

In 400m for men, Ravindra Mahamuni (Mumbai) was the winner, while Mathew Paul (Kerala) claimed men's 800m title. Sunita Dahiya (Rohtak) took the gold in women's 800m.

Some of the other gold medal winners included Sugan Yadav of Rohtak (women's discus throw) and Mysore's Rama J J (women's heptathlon).

Kerala and Madurai came first in men's and women's 4 x 400m relays, respectively.

BOOK REVIEW

Eminently Readable

V. Chandra*

Ruhela, S.P. In Search of Sai Divine. New Delhi, M D Publications, 1996. Pp. 190. Rs.100/-.

It was Max Weber who first sociologically analysed the phenomenon of prophet or the spiritual leader. Although sociology of religion is now a fairly advanced field in its own right, no significant work, whatsoever, has been done in the sociology of spiritual leaders in India. Ruhela has been attracted towards the Sai Baba phenomena and has been studying it for the last 23 years. In this publication under review, the author presents a lucid yet comprehensive and critical review of all *the significant writings and researches* on Sai Baba since early 1970s till the end of 1995 i.e. till the Baba's 70th birthday. It must have been quite an uphill task for Ruhela to have gathered such a wide array of works from diverse sources. Still daunting must have been the task of identifying, reviewing and sequencing an impressive collection of significant writings of scholars in the fields as divergent as behavioural and physical sciences.

The book is divided into two sections. The first part consists of a brief introduction of Sai Baba, his early childhood, and the Sai mythology. It is basically what Sai says about himself and his role and identity as an *'avatar'* of the age. In the second section Ruhela distills the essence of what numerous Sai scholars and disciples from diverse disciplines have had to say through their observation, intuition and research about Sai, the Sai preachings, Sai ideology, Sai sociology and Sai philosophy, etc.

The volume provides some very significant and startling perspectives of Sai Baba from his disciples and scholars :

> A renowned psychiatrist from USA, Samuel Sandweiss observes: "Sai Baba represents my personal and professional life. He challenged my basic values and beliefs, the way I viewed and made sense out of reality, the very centre of my existence. And as a psychiatrist with a belief system which in a great measure reflected modern psychiatric thought, I saw Sai Baba represented a deeply imposing challenge to my profession."
>
> Diana Baskin, another scholar of religion observes: "Swami's love and compassion are so deep that if we, each, could develop but a small amount of it we would be instantly in the 'Golden age'.

As a spiritual personality shouldering a great global mission, Baba has attracted the attention of sociologists and educationists both from India and abroad. Baba says that if everlasting peace, happiness and God's grace are to be achieved one should strive to reduce ego consciousness. S.P. Ruhela notes that in India many believe that modernity and tradition are antithetical. Baba proves the fallacy of this notion by giving examples as to how our traditions, values, practices and knowledge can lay solid foundations for conducive social living.

The author displays rare depth of understanding and erudition in his treatment of Sai literature and philosophy. He has himself written extensively on Sai Baba. Ruhela notes in one of his earlier publications, "The Educational Theory of Satya Sai Baba (*University News*, September 1992), "Baba's educational philosophy does not belong to Idealism' *per se* or to 'Transcendental Idealism' alone. It is in fact a broad integral or integrated philosophy of education which is a judicious and functional blending of these four powerful philosophies : Idealism, pragmatism, reconstructionism, and futurism".

Ruhela also reviews the writings of some of the best management experts on Sai Baba's ideas and points out how some of the most effective management principles operating in our institutions and firms are beautifully highlighted in Sai's preachings. A.N. Haksar (1989), former Chairman of ITC Ltd., asserts that Baba's 'Prasanthi Nilayam' is an ideal school for all practising managers, politicians, government officials, etc. According to him, "Baba taught us that unity, purity and diversity in humanity should be recognised; that man, society and world are the trinity and that unity and harmonious effort bring progress in living so-

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**Research Associate, International Management Institute, New Delhi-110016.*

ciety constituting the world".

The book is a unique and rare publication of its own kind — a labour of love of an ardent Sai devotee. Yet, his writings present a critical review of the materials in an objective manner as per the best traditions of social science research. Even for a non-believer of Sai Baba, the book would be of great interest because in it one finds the different approaches adopted by scholars from different disciplines in studying the spiritual phenomenon of incarnation or prophethood. I found *In Search of Sai Divine* an eminently readable, extremely thoughtful and blissful experience. Each of the eleven chapters contains uptodate and relevant references. In the last chapter the author has aptly concluded his findings and has given valuable suggestions for researchers of different fields.

COMMUNICATION

Selection of Vice Chancellors

I read with avid interest the article "Selection of Vice-chancellors" by B.D. Agarwala in your issue dated 9th September 1996. I suggest the following for the authorities to ponder and come to a decision. Shri Pylee, former vice-chancellor of Cochin University had suggested constitution of a National Higher Education Commission for selection of Vice-chancellors. Why should we multiply commissions and add to the burden of exchequer.

We already have Union Public Service Commission, the agency which recruits for the apex services. UPSC should be entrusted with the task of preparing a panel of well qualified and competent persons to be appointed as vice-chancellors. This panel should be valid for a period of 6 months atleast if not for one year. As and when a vacancy arises or is likely to arise, the chancellors should address the UPSC for suitable names. The UPSC should send five names from out of the subsisting panel. While doing so, UPSC should ensure that the names released are available for appointment. This rigmarole they should do themselves.

If, say, a vacancy of vice-chancellor is to be filled up in one of the Tamil Nadu universities, UPSC should release the names of those who do not belong to Tamil Nadu or adjoining states. From out of the panel, UPSC should sponsor names of those from northern/north western/north eastern/western states for appointment as VC in any one of the universities in Tamil Nadu. Likewise, if a vacancy of VC is to be filled up in northern states, names of those belonging to southern/western/eastern states alone should be sponsored. This will avoid political pressure from the respective states and the VC can have more autonomy and independence since he will have no axe to grind.

We have liberalised our economy. Why not we liberalise the statutes in the interest of higher education.

K. Ramanathan,
D-11, Guru Jambeshwar
University;
Hisar-125 001.

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Date: 24th December, 1996. **REGISTRAR**

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

HUMANITIES

Philosophy

1. Agarwal, Sukumar. **Trance states and trance personality : A critical analysis.** Rohilkhand. Dr S N Thapaliyal, K G K College, Moradabad.

2. Barman, Nirmali. **Man, religion and society in the philosophy of Swami Vivekananda.** Gauhati. Dr D K Chakravarty.

3. Manjit. **Madhya Kaleen Bhartiya santon ke maton kee darshnik prishthabhoomi.** Rohilkhand. Dr S N Thapaliyal, K G K College, Moradabad.

4. Naqvi, Viqar Fatma. **Islam Dharm ke pariprekshya mein Barelvi aur Devbandi shiksha-vidhayon ka tulnatmak adhyayan.** Rohilkhand. Dr S N Thapaliyal, K G K College, Moradabad.

5. Raja Ratnam, M. **The Central Doctrines of early Buddhism : A study in ethics and soteriology.** Andhra,

6. Sasidharan, P K. **Philosophy, non-philosophy and antiphilosophy with reference to Wittgenstein's critique of language.** Calicut. Dr K Kanthamani, Prof, Department of Philosophy, University of Calicut, Calicut.

7. Singh, Pradyumna Shah. **Jain evam Bauddh nyaya mein anuman ka tulanatmak adhyayan.** Jain Vishva Bharati. Acharya Vishvanath Mishra, Head (Retd), Department of Jainology, Jain Vishva Bharati Institute, Ladnun.

8. Sinha, Ajay Kumar. **Sarvodaya evam upyogitavad : Ek tulnatmak evam sameekshatmak adhyayan.** Bihar. Dr Meena Kumari, Reader, Department of Philosophy, M S College, Motihari, East Champaran.

9. Verma, Manju. **A critical study of Buddhist idealism.** Bihar. Dr R P Srivastava, Department of Philosophy, B R Ambedkar Bihar University, Muzaffarpur.

Religion

1. Ahmed, Asha Mohd. **Sheikh Muhammad Nasiruddin Al-Albani and his contribution to Hadith.** Jamia. Prof Majid Ali Khan, Department of Islamic Studies, Jamia Millia Islamia, New Delhi.

Fine Arts

Drawing & Painting

1. Vishnoi, Ekta. **Bhartiya chitrakala kee samriddhi mein Jain laghu chitron ka yogdan.** Rohilkhand. Dr (Smt) Pushpalata Sharma, S R S College, Bareilly.

Music

1. Awasthi, Alka. **Krishna kee avdharna mein Bhartiya sangit ka adhyayan evam vivechan.** Rohilkhand. Dr (Smt) Sudha Rani Sharma, S R S College, Bareilly.

2. Kolatkar, Nalini Yeshwant. **Pandit Vishnu Narayan Bhatkhande : An evaluation.** Marathwada. Smt C A Deshmukh, Department of Music, Government College of Arts and Science, Aurangabad.

3. Mehrotra, Namita. **Bharatiya shastriya sangit kee bandishon mein nihit shringarik paksh ka vivechnatmak adhyayan.** Rohilkhand. Dr Jyotsanamayee Mukharjee, S R S College, Bareilly.

4. Mishra, Shikha. **Tulsi ke kavya mein prayukta sangitik shabdawaliyon ka vishleshnatmak adhyayan.** Rohilkhand. Dr (Smt) Kanta Dhawan, S R S College, Bareilly.

5. Rajjade, Indu. **Bihar Prant ke Bhojpur kshetra ke lokgeeton ke shastriya sangit tatvon ka adhyayan evam vivechan.** Rohilkhand. Dr (Smt) Kanta Dhawan, S R S College, Bareilly.

6. Saxena, Ranjana. **Tappa gayan shailee ka itihasik evam vivechanatmak adhyayan.** Rohilkhand. Dr Jyotsanamayee Mukharjee, S R S College, Bareilly.

Language & Literature

1. Elizier, John. **The logical structure of phonological representations.** CIEFL. Dr K G Vijayakrishnan, Reader and Head, Department of Linguistics and Contemporary English. Central Institute of English and Foreign Languages, Hyderabad.

2. Jena, Bina. **The descriptive analysis of Bhuyan dialect of Northern Orissa.** Ravishankar. Dr G P Srivastava, Head, School of Studies in Linguistics, Pt Ravishankar Shukla University, Raipur

English

1. Agarwal, Vipasha. **Quest for identity in the novels of Anita Desai, Kamala Markandaya and Ruth Prawer Jhabvala.** Roorkee.

2. Agrawal, Kumud Rani. **Sensibility and thought in the poetry of Lila Ray.** Rohilkhand. Dr Prem Sagar, Hindu College, Moradabad.

3. Agrawal, Meenakshi. **A comparative study of Richardson and Fielding on novelists.** Rohilkhand. Dr P K Jain, J S Hindu College, Amroha.

4. Agrawal, Satish Chandra. **The American historical novel : A study in stylistic and thematic variations.** Rohilkhand. Dr K K Kapoor, Bareilly College, Bareilly.

5. Baghya Lakshmi, S. **A comparative study of novels of Edith Wharton and Anita Desai.** Avinashilingam. Dr (Smt) Shyamala Sivanandam.

6. Huleppanavarmath, Gurudevi Ulavayya. **Metaphysical poetry and Kannada vacana literature : A study in comparison.** Karnatak. Dr C R Yaravintelimath, Prof, Department of English, Karnatak University, Dharwad.

7. Kapoor, Janesh. **A cross-cultural paradigm of man-woman relationship : A study of select novels.** HP

8. Lahiri, Navanita. **James A Michener : The popular novelist as ethographer.** Roorkee.

9. Rane, Jyoti Suhas. **The poetry of Sylvia Plath : The mind at conflict with the body.** N Maharashtra. Dr A N Mali, Pratap College, Amalner.

10. Rastogi, Roop Kamal. **Interpretive and critical reading : Theoretical explorations in text, textuality and textual gradation.** CIEFL. Prof Jacob Tharu, Reader, Department of English Literature, Central Institute of English and Foreign Languages, Hyderabad.

11. Savio, Dominic. **Pro-drop in Tamil and English.** CIEFL. Prof K A Jayaseelan.

12. Saxena, Rashmi. **The fiction of J D Salinger : A critical study.** Rohilkhand. Dr S C Mundra, Bareilly College, Bareilly.

13. Trivedi, Nisha. **The treatment of love, marriage and sex in select Indian women novelists in English with special reference to Anita Desai and Shashi Deshpande.** Ravishankar. Dr J Srihari Rao, Reader (Retd), House No 39-10-11/1, Near 2nd

Bus Stop, Murti Nagar, Visakhapatnam.

14. *Trivedi, Tripta.* ***A study of Anita Desai's novels in the light of the feminist movement.*** Rohilkhand. Dr (Smt) Sushma Sharma, K G K College, Moradabad.

15. Vishnu, Ashwini Kumar. **John Galsworthy the novelist : *A critical study*.** *Rohilkhand. Dr A L* Jain, Hindu College, Moradabad.

Sanskrit

1. Anitha, S. **Krsnagiti of Manaveda : A critical study.** Calicut. Dr P Narayanan Nambodiri, Department of Sanskrit, University of Calicut, Calicut.

2. Anusuiya Devi. **Ashvaghosh ke kavyon ka darshnik adhyayan.** Rohilkhand. Dr R C Kandpal, K G K College, Moradabad.

3. Bhat, Ganapati. **Sabdakoustubhenavanhika parisodhanam.** Rashtriya Sanskrit

4. Bhatt, Annapurna. **Champ Bharatam ka sahityik adhyayan.** Rohilkhand. Dr M D Joshi, Hindu College, Moradabad.

5. Chakraworti, Bharat Prasad. **Samvatam : Pt Ambikadatt Vyas krit natak ka sameekshatmak adhyayan.** Veer Kunwar.

6. Dixit, Sangeeta **Pandit Raj Jagannath pranit istutipradhan geetikavyon ka sameekshatmak adhyayan.** Rohilkhand. Dr M D Sharma, N M S N Dass College, Badaun.

7. Johari, Bhavna **Shankaracharya : Vyaktitva aur krititva.** Rohilkhand. Dr Vidya Bhushan Sharma, Sahu Jain College, Najibabad.

8. Kala, Manisha. **Vakrokti kee drishti se Balmikiya Ramayan ka sameekshatmak adhyayan.** Rohilkhand. Dr M D Joshi, Hindu College, Moradabad.

9 Mathur, Prerna. **Balmiki Ramayan mein nihit Ayurvedic samagri ka sameekshatmak adhyayan.** Rohilkhand. Dr Sanat Kumar Shastri, N M S N Dass College, Badaun.

10. Maurya, Sukh Lal. **Mahabharat mein pratipadit Purusharth Chatushtya : Ek sameekshatmak adhyayan.** Rohilkhand. Dr M D Sharma, N M S N Dass College, Badaun.

11. Mithlesh Kumari. **Sanskrit natakon mein rajnitik tatva : Bhas se Vishakhdutt tak.** Rohilkhand. Dr G S Gupta, Principal, Vardhaman College, Bijnor.

12. Pathak, Anand Kumar. **Dr Shridhar Bhaskar Varnekar kee Sanskrit kritiyon ka sameekshatmak adhyayan.** Rohilkhand. Dr K K Shukla, Bareilly College, Bareilly.

13. Rashmi Rani **Bhartiya sanskriti ke pratik Ram : Balmiki Ramayan ke pariprekshya mein.** Rohilkhand. Dr (Smt) Mohini Pandey, G D H G College, Moradabad.

14. Sangeeta. **Narayan Bhattiri krit Narayaniyam kavya ka shaili vaigyanik adhyayan.** Rohilkhand. Dr Sanat Kumar Shastri, N M S N Dass College, Badaun.

15. Saxena, Kamini. **Narsinghpuran ka kavya saahtriya mulyankan.** Rohilkhand. Prof K D Gour, Principal, N M S N Dass College, Badaun.

16. Shukla, Manisha. **Dr Parmanand Shastri kee Sanskrit kritiyon ka sameekshatmak adhyayan.** Rohilkhand. Prof K D Gour, Principal, N M S N Dass College, Badaun.

17. Upadhyaya, Ramavtar. **Shrimad Bhagwat Puran mein adhyatma vivechanatmak adhyayan.** Rohilkhand. Prof K D Gour, Principal, N M S N Dass College, Badaun.

18. Upadhyaya, Vishwas Kumar. **Bharatrihari krit Vanya pandiya ke antargat sadhan samuddesh ka alochnatmak adhyayan.** Rohilkhand. Dr Satya Prakash Sharma, Aligarh Muslim University, Aligarh.

19. Varshney, Uma. **Vishvaganadarsh Champu kavya ka sahityik darshnik evam Bharat kee bhaugolik drishti se sameekshatmak adhyayan.** Rohilkhand. Dr Rama Kant, K G K College, Moradabad.

20. Vijay Kumar. **Markandeya Puran kaleen Bharat.** Bihar. *Dr Shiv Shankar Prasad, Department of Sanskrit, B R Ambedkar* Bihar University, Muzaffarpur.

Hindi

1. Agarwal, Satish Chandra. **Mauritius kee Hindi bhasha evam sahitya ka shastriya anusheelan.** Rohilkhand. Dr Jyoti Swaroop, Bareilly College, Bareilly.

2. Agrawal, Kanchan. **Acharya Hazari Prasad Dwivedi ke upanyason mein vichar tatva.** Rohilkhand. Dr Vidushi Bhardwaj, Department of Hindi, R B D College, Bijnor.

3. Agrawal, Sunita. **Adhunik Hindi ke Mahabharatopjivi prabandhkavyon ka sameekshatmak adhyayan.** Rohilkhand. Dr (Smt) Suman Agrawal, Govt Girls College, Rampur.

4. Alias, P P. **Dinkar ka gadya sahitya : Ek adhyayan.** CUST. Dr P V Vijayan, Prof (Retd), Department of Hindi, Cochin University of Science and Technology, Kochi.

5. Amithabhan, K. **Bhaktisastra ke adhar per Ramcharit Manas ka vishleshan.** CUST. Dr L Suneetha Bai, Prof, Department of Hindi, Cochin University of Science and Technology, Kochi.

6. Anjana. **Hindi ke Sikh kaviyon ka kavya, sanskriti aur darshan.** Rohilkhand. Dr Rama Kant Sharma, Bareilly College, Bareilly.

7. Asha Rani. **Giriraj Kishor ke katha sahitya mein abhivyakta samajik, sanskritik, rajnitik evam arthik chetana ka vishleshan.** Rohilkhand. Dr P L Sharma, S M College, Chandausi.

8. Bhardwaj, Poonam Rani. **Acharya Hazari Prasad Dwivedi ke upnayason ka tatvik vivechan.** Rohilkhand. Dr Ashok Kumar Agrawal, S M College, Chandausi.

9. Bhatiya, Sudha. **Hindi ke anchalik upanyason mein prem tatha saundarya nirupan.** Rohilkhand. Dr S C Gupta, Department of Hindi, Bareilly College, Bareilly.

10. Bhatt, Kamleshwar Prasad. **Mahakavi Tulsidas kee kavya bhasha ka shaili vaigyanik adhyayan.** *D Litt.* Bihar. Dr Asha Kishore, Prof (Retd), Department of Hindi, B R Ambedkar *Bihar University, Muzaffarpur.*

11. Chouhan, Sapna. **Jai Shankar Prasad ka gadya sahitya.** Durgavati. Dr (Smt) Nisha Tiwari, Mankunwar Bai Mahila Mahavidyalaya, Jabalpur and Dr (Smt) P Beohar, Mankunwar Bai *Mahila Mahavidyalaya, Jabalpur.*

12. Deepa. **Abdulrahim Khankhana : Vyaktitva, kritatva evam Acharyatva.** Rohilkhand. Dr Ramanand Sharma, Hindu College, Moradabad.

13. Dikshit, Kusum. **Sursagar mein prapta suktiyon ka alochnatmak adhyayan.** Rohilkhand. Dr Shri Kant Mishra, Department of Hindi, N M S N Dass College, Badaun.

14. George, Tessy. **Mulya parivartan kee avadharana : Swatantrayottar Hindi upanyas mein.** CUST. Dr S Shajahan, Prof, Department of Hindi, Cochin University of Science and Technology, Cochin.

15. Gupta, Madhu Bala. **Seth Govind Das ke natakon mein nari patra.** Rohilkhand. Dr (Smt) Shashi Rani Agrawal, Sahu Jain College, Najibabad.

16. Gupta, Suvigyanand. **Maithili Sharan Gupta ke kavya mein manavtavadi drishtikon.** Rohilkhand. Dr Brajendra Awasthi, N M S N Dass College, Badaun.

17. Heerakar, Vandana. **Swatantrayottar Hindi kahani mein nari sangharsh.** Hyderabad. Prof Shashi Mudiraj, Head, Department of Hindi, University of Hyderabad, Hyderabad.

18. Jagdish Sharan. **Nirala sahitya ka vichar paksh : Akalan aur vivechan.** Rohilkhand. Prof Mahendra Pratap, Principal (Retd), K G K College, Moradabad.

19. Joseph Kollamana, K D. **Adhunik Hindi upanyason mein parivarik jeevan ke badalte swaroop, 1950-70.** CUST. Dr A Aravindakshan, Prof, Department of Hindi, Cochin University of Science and Technology, Cochin.

20. Maurya, Jodha Ram. **Shri Ila Chandra Joshi : Jeewan aur sahitya.** Rohilkhand. Dr S C Gupta, Bareilly College, Bareilly.

21. Mishra, Krishna Gopal. **Uttar Ramcharitam kee katha ke adhar per rachit Hindi ke prabandh kavyon ka adhyayan.** Rohilkhand. Dr Shambhu Sharan Shukla, Degree College, Pilibhit.

22. Mishra, Neena. **Amrit Rai ke upanyason mein samaj chitran.** Rohilkhand. Dr Suresh Chandra Gupta, Bareilly College, Bareilly.

23. Mishra, Rolee. **Hindi kee samachar samitiyan : Itihas evam vartman dasha ka adhyayan.** Rohilkhand. Dr Virendra Dangwal, Bareilly College, Bareilly.

24. Mohammad Erfan. **Vrindavan Lal Verma kee itihas drishti.** AMU. Dr Bharat Singh, Lecturer, Department of Hindi, Aligarh Muslim University, Aligarh.

25. Nagapadmini Devi, P. **Hindi aur Telugu Ram kavya parampara : Sita ke charitra kee parikalpana.** Osmania. Dr Bheemsen Nirmal, 1-1-405/7/1, Gandhi Nagar, Hyderabad.

26. Nigam, Hema. **Himanshu Joshi ke katha sahitya mein parilakshit yugeen chetana.** Bangalore. Dr T G Prabhashankar, Prof, Department of Hindi, Bangalore University, Bangalore.

27. Omana, P V. **Hindi mein sahityettar anuvad kee samasyayen.** CUST. Dr N G Devaki, Reader, Department of Hindi, Cochin University of Science and Technology, Kochi.

28. Pathak, Uma. **Hindi kee adhunik lekhikayon ke katha sahitya mein samajik chintan.** Rohilkhand. Dr M R Khan, G F College, Shahjahanpur.

29. Paurana, Sudhaben C. **Swami Parasnath aur Guru Nanak : Ek tulnatmak adhyayan.** Saurashtra. Late Dr Naresh Pandya.

30. Poonam. **Mahadevi Verma ke gadya sahitya mein bimb-vidhan.** Rohilkhand. Dr Uma Kant Sharma, Bareilly College, Bareilly.

31. Prabhati, Kanchan. **Rohilkhand ke pramukh chhaya-vadyottar geetikar evam Shri Kailash Chandra Agrawal ke geetikavya ka adhyayan.** Rohilkhand. Dr Ramanand Sharma, Hindu College, Moradabad.

32. Prabhavathi Amma, N. **Ramayan per adharit adhunik Hindi kavyon ka vishleshanatmak adhyayan.** CUST. Dr N G Devaki, Reader, Department of Hindi, Cochin University of Science and Technology, Kochi.

33. Ranvir Singh. **Shamsher Bahadur Singh kee sahitya sadhna : Adhyayan evam mulyankan.** Rohilkhand. Dr S P Saxena, Department of Hindi, K G K College, Moradabad.

34. Rastogi, Archana. **Ritikaleen kavi Matiram ke kavya mein aprastut yojana ka samalochnatmak adhyayan.** Rohilkhand. Dr B S Bhardwaj, Department of Hindi, Bareilly College, Bareilly.

35. Rathore, Hemlata. **Dravid-bhashi Hindi lekhakon evam anuvadakon ke katha sahitya mein samajik bodh, 1950-1970.** Rohilkhand. Dr Prem Chandra Jain, Department of Hindi, Sahu Jain College, Najibabad.

36. Renu Kumari. **Sanskrit sahityakar Pandit Ambikadutt Vyas ke Hindi gadya sahitya ka parisheelan.** Bihar. Dr Ram Niranjan Kumar Verma "Parimalendu", Department of Hindi, M S College, Motihari, East Champaran.

37. Samta Rani. **Vishnu Prabhakar ke natakon ka vastugat evam shilpgat adhyayan.** Rohilkhand. Dr Dinesh Chandra Verma, Govt College, Charkhari, Hamirpur.

38. Satish Kumar. **Dr Ram Kumar Verma ke natya sahitya ka vichar paksha : Akalan aur vivechan.** Rohilkhand. Dr (Smt) Bala Agrawal, K G K College, Moradabad.

39. Saxena, Pulak. **Bhartiya navjagaran ka swaroop aur Jai Sankar Prasad ke sahitya mein uski abhivyakti.** Rohilkhand. Dr R K Chaturvedi, Govt Raza College, Rampur.

40. Sharada Kumari. **Kavi Tharun : Vyaktitva aur krititva.** Osmania. Dr Indu Vasisth, Department of Hindi, Osmania University, Hyderabad.

41. Sharma, Ashok Kumar. **Hindi patrakarita ke vikas mein sanchar kranti ka yogdan aur uska vishleshnatmak mulyankan.** Rohilkhand. Dr Virendra Dangwal, Department of Hindi, Bareilly College, Bareilly.

42. Sharma, Pranav. **Roopsahi : Acharyatav aur kavitav.** Rohilkhand. Dr Ramanand Sharma, Department of Hindi, Hindu College, Moradabad.

43. Sharma, Sunita. **Yashpal ke upanyason mein prem vyanjana.** HP.

44. Shaukat Ali. **Bal Krishan Sam aur Udaya Shanker Bhatt ke padhya natakon ka tulnatmak adhyayan.** Bihar. Dr P K Singh, Prof, Department of Hindi, B R Ambedkar Bihar University, Muzaffarpur.

45. Singh, Premlata. **Yashpal kee kahaniyon mein hasya vyanga.** Bihar. Dr Raj Narayan Ray, Department of Hindi, R D S College, Muzaffarpur.

46. Suja, C. **Jagdish Chaturvedi ka rachana sansar.** CUST Dr A Aravindakshan, Prof, Department of Hindi, Cochin University of Science and Technology, Kochi.

47. Toki, Rajendra Singh. **Ashleelata aur Hindi upanyas : Mulyabodh evam yug parivesh ke sandarbh mein.** Bihar. Dr Asha Kishore, Prof (Retd), Department of Hindi, B R Ambedkar Bihar University, Muzaffarpur.

48. Tyagi, Archana. **Ila Chandra Joshi ke upanyasyon ke nari patra.** Rohilkhand. Dr Chandra Prakash Arya, Vardhaman College, Bijnor.

49. Verma, Pushpa Rani. **Hindi cine geeton per Hindi sahitya ke vividh vadon ka prabhav.** Rohilkhand. Dr Uma Kant Sharma, Department of Hindi, Bareilly College, Bareilly.

50. Yadav, Surendra. **Mohan Rakesh aur unka natya-sahitya.** Devi Ahilya. Dr Rajendra Mishra, 9/2, Snehlataganj, Indore.

Urdu

1. Abdul Naseem. **Urdu naatgoi kee aareekh mein Ahmad Raza Khan Zazile Bareilvi ka muqam-e-martaba.** Rohilkhand. Shri Z Hasan Vaseem Bareilvi, Bareilly College, Bareilly.

2. Akhter, Gulshan. **Urdu nadiyon mein fasadat kee akaal : Takseem-e-mulk kee pashe nazar mein.** Jammu. Dr I U Manzer Azmi, Prof and Head, Department of Urdu, University of Jammu, Jammu.

3. Bhatt, Salig Ram. **Brij Narain Chakbast : Hayat aur shairi.** Rohilkhand. Shri Z Hasan Vaseem Bareilvi, Bareilly College, Bareilly.

4. Mohd Manzoor Alam. **Jagan Nath Azad : Fikar-O-fan.** Hyderabad. Prof Syeda Jaffer, Head, Department of Urdu, University of Hyderabad, Hyderabad.

5. Nikhat Parveen. **Ahmad Jamal Pasha : Life and works.** Bihar. Dr Md Hamid, Department of Urdu, Rajendra College, Chapra.

6. Niyaji, Mohammad Jawwad Kamal. **Hazratshah Niyaj Ahmed Sahab kee sakhsiyat aur fun.** Rohilkhand. Shri Z H Vaseem Bareilvi, Bareilly College, Bareilly.

7. Saber Hussain. **Suba Jammu ke elakai adab per Urdu ke asarat.** Jammu. Dr Zahur-Ud-Din, Reader, Department of Urdu, University of Jammu, Jammu.

8. Siddiqui, Abdussalam. **A critical study of Krishan Chander's novels.** JNU. Dr Aslam Parvez, Assoc Prof, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

Bengali

1. Bandyopadhyay, Deba Prasad. **Archaeology of Bangla grammar.** Telugu.

Assamese

1. Sarmah, Manoranjan. **Padmanath Gohain Barua : A study as an Assamese prose writer.** Gauhati. Dr Harinath Sarma Daloi, Head (Retd), Department of Assamese, M C College, Barpeta.

Marathi

1. Vyawahare, Vidya Sharad. **Istri geetantil istri pratima.** Marathwada. Dr Nagnath Kottapalle, Department of Marathi, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

Gujarati

1. Bhatt, Nita R. **Madhyakaleen Gujarati sahityaman Ravan Mandodri samvad vishyak rachnayen : Ek sameekshatmak adhyayan.** Saurashtra. Dr B S Jani, Reader, Department of Gujarati, Saurashtra University, Rajkot.

2. Vegada, N M. **Bhakta Kavi Muldas : A study.** Saurashtra. Dr B S Jani.

Nepali

1. Awasthi, Jai Raj. **A linguistic analysis of errors committed by Nepali learners of English.** Hyderabad. Prof Udaya Narayana Singh, Head, Department of Applied Linguistics and Translation Studies, University of Hyderabad, Hyderabad and Dr Panchanan Mohanty.

Persian

1. Abdul Waheed. **Shah Qateel Danapuri as a Persian ghazal writer.** Veer Kunwar.

2. Rashidi, Munira Bano. **Shahan-E-Mughaliya kee ilmi-o-adabi khidmat.** Nagpur. Dr Abdul Rub, Prof, V N Institute of Arts and Social Sciences, Nagpur.

Tamil

1. Prabalambal, G. **Origin and development of Parani works with special reference to Kalingathu Parani.** Osmania. Prof T S Manickam, Department of Tamil, Osmania University, Hyderabad.

Malayalam

1. Thomas, K V. **Urbanization and Malayalam novel with special reference to the works of O Chandumenon, S K Pottekkattu and Anand.** Calicut. Dr P V George Irumbayam, Prof, 49/1176A, Elamakara Road, Edappally, Kochi.

Kannada

1. Nayak, Vinaya Govindaray. **Kannadadalli mahila sahityada vikasada ghattagalu.** Karnatak. Dr (Smt) Channakka Pavate, Reader, Institute of Kannada Studies, Karnatak University, Dharwad.

2. Rathod, Pandit Kasanu. **Fha Gu Halakattiyavar patrika sahitya.** Karnatak. Dr B B Biradar, Reader, Institute of Kannada Studies, Karnatak University, Dharwad.

Telugu

1. Appala Raju, S. **Jakkana Vikramarka Charitramu : Bhasha pariseelana.** Andhra.

2. Bhogeswara Sarma, N. **Sri Datta Bhagavathamu Adwaita Vedantamu.** Andhra.

3. Chennaiah, J. **Telugu dina patrikala bhasha sahitya swaroopam, 1975-1990.** Osmania. Prof N Gopal, Department of Telugu, Osmania University, Hyderabad.

4. Gangadhara Rao, K. **Prabandha kavula sastra chamatkritulu.** Telugu.

5. Kummari Raju. **Sripada Subrahmanya Sastry ka kathalu, navalalu adhunika chaitanyam.** Hyderabad. Dr N S Raju, Lecturer, Department of Telugu, University of Hyderabad, Hyderabad.

6. Philip, Y. **Burrakatha pradarshana Lakshanam.** Telugu.

7. Suryanarayana Raju, M. **Life and complete works of D V Narasa Raju.** Telugu.

8. Vara Prasada Rao, K S R. **Tikkana's Aswamedha Parvam: Andhri karana auchitya parmarsa.** Bangalore. Dr T V Subba Rao, Prof (Retd), No 40/12-7, "Saurabha", Upstairs, 22nd Cross, Govindaraja Nagar, Bangalore.

9. Veeraraghavamma, Vinnakota. **Gopinatha Ramayanam : Streepatra chitrana.** Telugu.

Geography

1. Abdul Qadir. **Energy efficiency of food production system in the Upper Ganga-Yamuna Doab.** Jamia. Dr Mohd Firoz Khan, Department of Geography, Jamia Millia Islamia, New Delhi.

2. Alka Rani. **Bijnor Janpad mein sinchai evam krishi vikas ka bhaugolik vishleshan.** Rohilkhand. Dr Y P S Chouhan, S M College, Chandausi.

3. Bhat, Gajanan Narayan. **Resource base and pattern of development in Uttar Kannada District : A geographical perspective.** Karnatak. Dr S I Hugar, Reader, Department of Geography, Karnatak University, Dharwad.

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7. Krishna Devi. **Geographical appraisal of social cultural and economic changes in tribes of Kumaun Himalaya.** Rohilkhand. Dr R B Sahariya, Hindu College, Moradabad.

8. Madar, Yallappa Mareppa. **Regional disparities in agricultural development in Malaprabha Command Area.** Karnatak. Dr N C Vijayaraj, Prof (Retd), Department of Geography, Karnatak University, Dharwad.

9. Mahipal Singh. **Role of Moradabad City as a growth centre.** Rohilkhand. Dr H R Singh, Principal, M M College, Khekra, Meerut.

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11. Saxena, Santosh Kumar. **Post independence morphology of Rampur City : A study in urban geography.** Rohilkhand. Dr R P Singh, Principal, K G K College, Moradabad.

12. Tyagi, Nirankar Singh. **A welfare approach for Rural Area Development and planning : A geographical study of Bijnor Tehsil.** Rohilkhand. Dr S P Singh, Bardhman College, Bijnor.

History

1. Achyutanand. **Congress mein Pt Jawaharlal Nehru kee bhumika, 1935 se 1960 tak.** Bihar. Dr Padmasha Jha, Prof, Department of History, B R Ambedkar Bihar University, Muzaffarpur.

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3. Dwivedi, Rajkumar. **Harsh ke natakon ka sanskritik adhyayan.** Rohilkhand. Dr Keshav Prasad Singh, Principal, Sanjay Gandhi College, Chaukiya, Sultanpur.

4. Gupta, Indu. **Bihar mein press ka udbhav aur vikas : Ek aitihasik adhyayan.** Magadh.

5. Hyder Raza. **Contribution of the Iranian Afaqis during the Qutub Shahi period.** Osmania. Dr Sadiq Ahmed Naqvi, Department of History, Osmania University, Hyderabad.

6. Mishra, Pratiksha. **Madhya Prant evam Berar kee vidhayika mein nari samasyaon ke prati chetana, 1920-1946 tak.** Durgavati. Dr Rajeev Dubey, Department of History, Rani Durgavati Vishwavidyalaya, Jabalpur.

7. Mohammed Mustafa. **British policy towards Inam settlements in Madras Presidency, 1801-1871.** Hyderabad. Dr K S S Seshan, Reader, Department of History, University of Hyderabad, Hyderabad.

8. Nair, Jisha D. **History of the economic conditions of India during the rule of East India Company from 1757 A D to 1857 A D.** Durgavati. Dr (Smt) A Thakur, Govt Mahakoshal Arts and Commerce College, Jabalpur.

9. Neelam Kumari. **Mahabharat mein pativratya dharma.** Bihar. Dr Radhe Shyam Sharma, Prof and Head, Department of Ancient Indian History and Culture, R D S College, Muzaffarpur.

10. Rajput, Rajana. **12vin shatabdi mein Uttar Bharat kee samajik dasha.** Rohilkhand. Dr V K Kaushik, Vardhman College, Bijnor.

11. Raven, Bimal. **Land revenue system in Damin-I-Koh, in Santhal Paragana : A study of its history, special features and problems from 1872-1912.** Vinoba. Prof S Ali, Department of History, Vinoba Bhave University, Hazaribag.

12. Seshadri, C S. **A religion based urban centre in early mediaeval politics of Southern Karnataka : A study of Sravana Belagola, its history and art.** Bangalore. Dr R Ramakrishnan, Lecturer, Department of History, Bangalore University, Bangalore.

13. Singh, M P. **Bhartiya swatantrata andolan mein Rohilkhand kee istri swatantrata senaniyon ka yogdan.** Rohilkhand. Dr G S Hothi, Bareilly College, Bareilly.

14. Singh, Yumnam Mangi. **Development of sports and physical education in Manipur, 1947-1990.** Manipur. Prof S N Pandey, Department of History, Manipur University, Imphal.

15. Sinha, Pramod Kumar. **Position of Hindu women during mediaeval society, 1206 - 1707 A D.** Bihar. Dr B D Pandey, Prof, Department of History, L S College, Muzaffarpur.

16. Yadav, Suman. **Pilibhit Janpad ka Bharatiya swatantrata andolan mein yogdan : Ek alochnatmak adhyayan.** Rohilkhand. Dr J S Hothi, Bareilly College, Bareilly.

UNITED WORLD COLLEGES

THE 1997 SELECTION

Applications are invited for the September 1997 Entry to the United World Colleges situated in:

CANADA, INDIA, ITALY, HONG KONG, NORWAY, SINGAPORE, SWAZILAND, UNITED KINGDOM & U.S.A.

The United World Colleges:

• provide a two year high quality educational programme leading to the International Baccalaureate Diploma (I.B.) which is recognised as equivalent to the 12th Std. by the Association of Indian Universities. • offer an international, co-educational and residential environment for students from over 60 countries worldwide. • aim to further international understanding by making education a force to unite nations and people.

Entry to the colleges is based solely on personal merit. Full and half scholarships are available to selected students, both overseas and at the Mahindra College, where needed. There are 10 places available overseas and 25 at the Mahindra College.

To apply you must be an Indian Citizen and should:

• have been born on or between 1st September 1979 and 1st September 1981. • have appeared for the Xth Standard examination, or due to appear by March 1997 latest. • have demonstrated originality rather than successful rote learning. • be involved in extra-curricular activities, whether sporting, aesthetic, practical or intellectual. • be prepared to be an outgoing and articulate representative of your country.

Interested applicants should write for application forms to:

Capt. Raj Mohindra, United World Colleges, Indian National *Committee, Mahindra Towers, Road No. 13, Worli, Mumbai 400 018.*

Enclose with your request:

• a self-addressed envelope (24 cm x 11 cm) affixed with a Rs. 5/- stamp. • a demand draft of Rs. 100/- drawn on the Union Bank of India A/c, The Mahindra United World College of India, Mumbai.

APPLICATIONS MUST REACH ON OR BEFORE 7th MARCH 1997.
INTERVIEWS WILL BE HELD DURING APRIL 1997.

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FACULTY OF MANAGEMENT STUDIES
M.L. SUKHADIA UNIVERSITY
UDAIPUR

ADMISSION NOTICE 1997-98

Applications are invited for admission to M.B.A. (Full time two year regular programme) for the session 1997-98. Prospectus and application forms can be obtained from the office of the Director, Faculty of Management Studies, College of Commerce (Campus), Post Box No. 54, Udaipur on payment of Rs. 250/- in cash counter or if required by registered post by remitting Rs. 275/- by a crossed bank draft only in favour of the Director, Faculty of Management Studies, Udaipur (Rajasthan). Forms will be available from 15th Jan. 1997. Application forms will not be sent by post after March 15, 1997. **Last date for submission of applications - 2nd April, 1997**

Eligibility : Candidates possessing Bachelor's degree (10+2+3 scheme) in any discipline from a recognised University with at least 50% marks (45% for SC/ST) in the aggregate are eligible. Those appearing at the final year Bachelor's Degree examination are allowed to appear at the entrance test provisionally.

Entrance Test : All applicants desirous to take admission to M.B.A. course of Faculty of Management Studies, Udaipur will have to fill Rajasthan Management Admission Test (RMAT) form available from the Coordinator, RMAT, Faculty of Management Studies, Mohan Lal Sukhadia University, Udaipur and submit the same as per RMAT Bulletin instructions.

A.K. Singh
DIRECTOR

CLASSIFIED ADVERTISEMENTS

SHRI GURU GOBIND SINGHJI COLLEGE OF ENGINEERING & TECHNOLOGY
VISHNUPURI, NANDED

Advertisement No. SGGSCE&T/ADVT/96-97/01

SPECIAL RECRUITMENT DRIVE FOR BACKWARD CLASS CANDIDATES ONLY
(With Cent-percent Grant-in-aid from Government of Maharashtra and approved by Government of India)

Application(s) are invited for the under mentioned post (s) from suitable Backward class candidates on plain paper (s) with attested copies of the supported documents, (through proper channel, in case of the candidates in employment), so as to reach The Principal, Shri Guru Singhji College of Engineering & Technology, Vishnupuri, Nanded-431 602, **within twenty days** from the date of publication of this advertisement.

The Institute offers Graduate and Post-Graduate courses, which are approved and funded by the Government of Maharashtra, Government of India and it is affiliated to Swami Ramanand Teerth Marathwada University, Nanded. Those who are interested besides teachings, research and consultancy, would find working at the Institute enjoyable. The Institute provides facility of Group Insurance Schemes and the pensionable Services.

Sr.No.	Name of the post and Pay Scale	Total Posts	Reserved for
A)	**PROFESSOR : Rs. 4500-7300**		
1.	Electronics/Computer	02	Two post are reserved
2.	Instrumentation	01	for SC One for ST
3.	Production Engineering	01	One for NT-1 and
4.	Civil Water Management	02	Three for OBC Category.
5.	Sugar Technology	01	
		07	
B)	**ASSISTANT PROFESSOR : Rs. 3700-5700**		
1.	Electronics/Computer	01	One post is reserved
2.	Production Engineering	02	for SC, Two for ST,
3.	Textile Technology	01	One for VJ and
4.	Sugar Technology	01	One for OBC Category
		05	
C)	**LECTURER : Rs. 2200-4000**		
1.	Electronics/Computer	04	Two posts are reserved
2.	Instrumentation	03	for SC, Four for ST,
3	Production Engineering	02	One for VJ, Two for NT-1,
4.	Textile Technology	02	One for OBC and
		11	one for SBC Category.

Minimum qualification, scale, maximum age limit are as per All India Council for Technical Education, State Government and Swami Ramanand Teerth Marathwada University, Nanded rules. Application requires, the information about 1) The name of the Post 2) Candidates full name with corresponding address with pin code, 3) Date of birth and age, 4) Educational Qualification, years of passing/percentage/class etc., 5) Experience Teaching/Industrial/Professional, 6) Caste with Category etc. (Copy of caste Validity Certificate from competent Authority should be enclosed alongwith application.)

Note :

1. Reservation for Lady Candidates is applicable to the above Cadres as per Government Resolution dated 15th Feb., 1996.
2. The details of qualification for the above posts can be had from the College Office, if required.
3. No. of posts to be filled as mentioned above, may be changed.
4. If any candidate desires to apply for more than one posts, he must send separate application form for each post.
5. The candidate must quote the Advertisement Number on the top of the envelope and application form
6. Application received after the stipulated period/date will not be considered

PRINCIPAL & SECRETARY

SHRI GURU GOBIND SINGHJI COLLEGE OF ENGINEERING & TECHNOLOGY
VISHNUPURI, NANDED

Advertisement No. SGGSCE&T/ADVT/96-97/02

RECRUITMENT

(with Cent-Percent Grant-in-aid from Government of Maharashtra and approved by Government of India)

Application(s) are invited for the under mentioned post(s) from suitable candidates on plain paper(s) with attested copies of the supported documents, (through proper channel, in case of the candidates in employment), so as to reach, The Principal, Shri Guru Gobind Singhji College of Engineering & Technology, Vishnupuri, Nanded-431 602, **within Twenty days** from the date of publication of this advertisement.

The Institute offers Graduate and Post-Graduate courses, which are approved and funded by the Government of Maharashtra, Government of India and it is affiliated to Swami Ramanand Teerth Marathwada University, Nanded. Those who are interested besides teaching, research and consultancy, would find working at the Institute enjoyable. The Institute provides facility of Group Insurance Schemes and the pensionable Services.

1) PROFESSOR : Rs. 4500-7300

i) Electronics/Computer — 02 posts

ii) Civil Water Management — 01 post

2) LECTURER : Rs. 2200-4000

i) Electronics/Computer — 01 post

ii) Textile Technology — 01 post

iii) Mathematics — 01 post

3) SENIOR PROGRAMMER — 01 post
Pay Scale Rs.2200-3700

4) SR. PROJECT LEADER — 01 post
Pay Scale of Rs.3700-5700

5) SR. RESEARCH ASSISTANT —
01 post
Pay Scale Rs 1640-2900

Minimum qualification, scale, maximum age limit for posts at Sr. No. 1,2 & 3 are as per All India Council for Technical Education, State Government and Swami Ramanand Teerth Marathwada University, Nanded rules.

Minimum qualification, scale, Maximum Age limit for the post at Sr. No. 4 & 5 are as per norms prescribed by Govt.of India. National Science & Technology Entrepreneurship Development Board (N.S.T.E.D.B.), New Delhi.

Application requires, the information about 1) The name of the Post 2) Candidates full name with corresponding address with pin code, 3) Date of Birth and age, 4) Educational Qualification, year of passing/percentage/class etc., 5) Experience Teaching/Industrial/Professional, 6) Caste with Category etc. (Copy of caste Validity Certificate from competent Authority should be enclosed alongwith application.)

Note :

1. Reservation for Lady Candidates is applicable to the above Cadres as per Government Resolution dated 15th Feb., 1996.
2. The posts mentioned at Sr. No. 4 & 5 are temporary for one year and likely to be continued subject to the continuation of *Entrepreneurship Development* Cell Scheme from the competent authority.
3. The candidate must quote the Advertisement Number on the top of the envelope and ~~application~~ form.
4. The details of qualification for the above posts can be had from the College Office, if required.
5. No. of posts to be filled as mentioned above, may be changed.
6. If any candidate desires to apply for more than one posts, he must send separate application form for each post.
7. Application received after the stipulated period/date will not be considered.

PRINCIPAL & SECRETARY

JAMIA MILLIA ISLAMIA

(CENTRAL UNIVERSITY)

CORRIGENDUM

In partial modification of his University's Advertisement No.6/1996-97 dated 23.12.1996 regarding recruitment of teaching and non-teaching posts, an additional note is added. "Reservation of 15% posts for SC, 7.5% for ST and 27% for OBC candidates exist." The last date of receipt of applications has been extended till **05-02-1997**.

Date : 08-01-97

Hasib Ahmad
REGISTRAR

DIBRUGARH UNIVERSITY

DIBRUGARH (ASSAM)

(ESTABLISHMENT BRANCH-A)

Advertisement No. 8/96

Applications are invited for the following posts :

1. Professor in Anthropology : 1 (One) post
   Spl. : Social Anthropology.
2. Professor in Sociology : 1(One) post.
   Spl. Open.
3. Professor in Geophysics : 1(One) post.
   Spl. & E.Q. : M.Sc. and Ph.D. in Geophysics.
4. Professor in Applied Geology :
   1(one) post. Spl. Open
5. Professor in Mathematics : 1(one) post. Spl.Open.
6. Reader in Anthropology : 1(one) post.
   Spl. : Pre-historic archaeology.
7. Reader in Pharmaceutics : 1(one) post.

   E.Q.: Master's Degree in Pharmaceutics after obtaining a 1st Class basic degree in Pharmacy with 8 years experience as Lecturer in Degree level.

   OR

   Master's Degree in Pharmacy after obtaining 1st Class basic degree in Pharmacy followed by a Doctorate degree or equivalent published work of high standard in appropriate branch of Pharmacy with 5 years experience in teaching at Degree level/Industry/Research.
8. Reader in Mathematics : 1(one) post. Spl. Open.
9. Lecturer in Statistics : 1(one) post.
   Spl. : Distribution Theory/Statistical Inference and Sample Survey. Ph.D. Degree in one of the above specialisations is desirable.
10. Lecturer in Chemistry : 1(one) post.

Spl. & E.Q. Inorganic Chemistry. A Doctorate Degree or Research work of an equally high standard and Inorganic Chemistry as Special paper of M.Sc.level.

Preference will be given to persons having research experience in inorganic kinetics/ Inorganic solid state Chemistry/Reactivity in Inorganic Chemistry/Inorganic Synthesis/molecular recognition.

11. Lecturer in Assamese : 2 (two) posts.

Spl. in post No. 1 : Group A or C

Post No. 2 : Group B.

12. Lecturer in Pharmaceutics :

2(two) posts (one leave vacancy)

Spl. & E.Q. : Ist class Master degree in Pharmaceutics after obtaining basic degree in Pharmacy.

13. Lecturer in Pharmaceutical Chemistry:

1 (one) post.

Spl. & E.Q. : Ist class Master degree in Pharm. Chemistry after obtaining basic degree in Pharmacy.

14. Lecturer in Economics : 1 (one) post (leave vacancy for two years)

Spl. : Mathematical Economics and econometrics at P.G. level.

Desirable : Economics (Honours) with Statistics and Mathematics combination at degree level. (None need apply without such specialisations).

15. Lecturer in Mathematics : 1 (one) post.

Spl. Open.

16. Lecturer in Life Sciences : 1 (one) post.

Spl. & E.Q. Spl : Bio-chemistry. E.Q. : M.Sc. in Life Sciences/M.Sc. in Zoology.

17. Statistician : 1(one) post.

E.Q. : (i) Master degree in Statistics (at least IInd Class) or a Graduate with Mathematics and Statistics as a combination of subject at the graduate level with a minimum of 5 (five) years experience of working in statistical matters in an educational institution/Govt. organisation.

(ii) Age not more than 40 years as on 31.1.1997.

18. Research Assistant (for Political Science Deptt.) : 1 (one) post.

E.Q. : 1. Master degree in Political Science.

2. Good academic career.

3. Research experience.

Job requirements :

1. To sort out and to clip the different news items, articles, editorials, etc. from various regional/National news papers.

2. To assist the members of the teaching staff and Research Scholars in the Deptt. to carry out their research programmes and other duties assigned by the department.

Essential Educational Qualifications as per U.G.C. Requirements:

Professor : An eminent scholar with published work of high quality, actively engaged in research with 10 (ten) years of experience of Post Graduate teaching and/or research at the University/National level institutions, including experience of guiding research at doctoral level.

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader : Good academic record with a doctorate degree or equivalent published work. Candidates from outside the University system in addition shall also possess at least 55% marks or an equivalent grade at the Master's degree level.

Eight years experience of teaching and/or research including upto 3 years for research degrees and has made some mark in the area of scholarship as evidenced by quality of publications, contributions to educational innovation, design of new courses and curricula.

Lecturer : Good academic record with at least 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from a foreign University.

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers (NET) conducted by U.G.C., C.S.I.R. or similar test accredited by U.G.C.

Pay Scale :

Professor : Rs.4500-150-5700-200-7300/- p.m.

Reader : Rs.3700-125-4900-150-5700/- p.m.

Lecturer : Rs.2200-75-2800-100-4000/- p.m.

Statistician : Rs.1785-50-2035-60-2095-EB-60-2395-80-2475-EB-80-2875-

Mass Communication Research Centre

Jamia Millia Islamia

New Delhi

Admission Notice No. XV 1997

Applications are invited for a two year. M.A. course in Mass Communication. Candidates who have taken their first degree in any discipline under the 10 plus 2 plus 3 system are eligible to apply provided they have secured 50% marks in their first degree examination. Candidates should not be more than 30 years of age as on 1.8.1997. Those who are appearing in their final year of qualifying examination can also apply.

Application form alongwith the Prospectus can be obtained from 20.1.1997 either directly from the office of the centre on cash payment of Rs.30/- from 10.00 a.m. to 1.00 p.m. (Monday to Friday), or through post by sending a self-addressed envelope (size 7" x 10") along with a Bank draft or Indian Postal Order of Rs. 40/- in favour of Mass Communication Research Centre, Jamia.

Applications accompanied by Indian Postal Order or a Demand Draft for Rs. 300/- (Non refundable) drawn on the Union Bank of India (extension Counter), Jamia Nagar as entrance test fee in favour of Mass Communication Research Centre, Jamia, must reach the undersigned on or before **3rd March, 1997, 5.00 p.m.**

Applications received after the prescribed date and time will not be entertained.

M.B. Mughal

Controller (Admn. & Finance)

100-3575-125-4200/-p.m.

Research Assistant : Rs.1835-50-2035-60-2155-EB-60-2395-80-2555-EB-80-2375-100-3575-125-4325/-p.m.

All posts carry usual allowances as admissible under the rules in force from time to time and the incumbent will be eligible for contributory Provident Fund and Gratuity on confirmation as per rules of the University.

9(Nine) copies (6(Six) copies for non teaching post) of applications on plain paper giving complete bio-data with attested copies of all testimonials from Matriculation/HSLC onwards with an application fee of Rs.50/- (Rupees Fifty)/ Rs.25/-(Rupees *Twenty Five for* S.C./S.T. candidates) only by Bank draft payable at STATE BANK OF INDIA, Dibrugarh University Branch drawing in favour of the REGISTRAR, DIBRUGARH UNIVERSITY, DIBRUGARH-786004, should reach the undersigned on or before 10.2.1997.

Persons already in employment should apply through proper channel or with a 'NO OBJECTION CERTIFICATE' from the present employer.

Applications not in conformity with the above requirements will not be entertained.

Candidates will be required to appear before an interview if and when called for. No TA/DA is admissible.

REGISTRAR

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF GORAKHPUR
GORAKHPUR-273 009

Applications are invited for one post of RA/SRF/JRF from suitably qualified candidates to work in DAE sponsored research project entitled "Crystalisation of quercetinase in single crystal forms suitable for X-rays crystallographic studies" under the supervision of Dr. K.D.S. Yadav, Dept. of Chemistry, University of Gorakhpur, Gorakhpur-273009. Applications should reach Dr. Yadav **within 15 days** after the date of advertisement.

SAURASHTRA UNIVERSITY
UNIVERSITY ROAD
RAJKOT-360 005

Applications in the prescribed forms are invited from the eligible candidates for the following posts :

1. **Professor** : Mathematics - 1, Management - 1 (for M.B.A.), Sanskrit -1.
2. **Reader** : Gujarati - 1, History - 1, Sociology - 1, Physics - 1, Hindi - 1, Psychology 1, Library and Information Science - 1 (S.T.) Management - 2 (for M.B.A.).
3. **Lecturer** : English - 2, Law - 2, History - 1, Economics - 1, Microbiology - 1, Electronics - 1, Sociology - 2 (one for S.T.), Sanskrit -1 (S.T.), Management - 3 (one for S.C.) (for M.B.A.).

Application forms can be had from the Registrar, Saurashtra University, University Campus, University Road, Rajkot-360 005 on sending a self addressed stamped envelope (worth Rs.10/-) of 30 x 20 cms. size.

Applications duly filled in **Eleven Copies** should reach this office **on or before 28.02.1997** alongwith A/C Payee Demand Draft of Rs.100/- (Non Refundable) for each of the posts, drawn in favour of the REGISTRAR, SAURASHTRA UNIVERSITY, RAJKOT.

Note :
1. Post of Professor - Sanskrit, Reader - Hindi and Psychology and One post of Lecturer Law are subject to U.G.C. approval.
2. Details of Pay Scales, Quali-

ZANDU FOUNDATION FOR HEALTH CARE

The Zandu Foundation is a registered society under the Registration Act 1960, Reg. No. F-14266(Bom.) and the Bombay Public Trust Act, 1950. It is established with the aim of conducting and promoting research and development activities in the area of Health Care, it lays emphasis on the projects based on the traditional system on medicine

Applications are invited for the DBT (Govt. of India) sanctioned project entitled "Development of novel germplasm of *Mucuna* with improved yield and L-Dopa content through conventional breeding and tissue culture methods", for the following post

POST	NO.	PAY
1. **Research Officer**	One	Rs. 3330/p.m. HRA and Medical as per the DBT norms.
2. **Research Assistant**	One	Rs.1100/p.m. Consolidated
3 **Research Assistant**	One	Rs.1100/p.m. Consolidated

Qualification and Experience

Post No. 1 : Candidate should have Research experience after M.Sc.in the field Plant Breeding OR fresh Ph.D. in Plant Breeding. Candidates who are likely to submit their Ph.D. thesis will also be considered.

Post No. 2 & 3 : Candidates should have working experience in Pharmaceutical industries or research institute after their schooling.

For Post No. 1, accommodation can be considered at the Farm house of the Zandu Foundation situated in Ambach (Village), Valsad (Dist.), Gujarat.

All above posts are purely on temporary basis. The tenure of the project is initially for three years.

Candidates attending interview will be reimbursed second class to & fro rail or bus fare by shortest route.

Interested candidates can send their resume **within 15 days** to "Dr. K.M. Parikh, Secretary, Zandu Foundation For Health Care, 70 Gokhle Road (South), Dadar, Mumbai-400 025. Fax(022) 4375491.

Dr. R. Krishnamurthy
Principal Investigator

fications and Specialization will be sent alongwith blank application forms.

S.B. Pandya
REGISTRAR

NAGPUR UNIVERSITY

EMPLOYMENT NOTICE

No. GA/D/G/915
Dated: 3rd January, 1997

Applications in the prescribed form are invited for the Post of University Librarian so as to reach the University on or before 31st January, 1997 by 5.00 p.m. *Application form can be obtained from the* Registrar, Nagpur University, Nagpur-440 001.

QUALIFICATIONS AND EXPERIENCE:

(a) First or Second Class M.Lib. Sc.

OR

M.A./M.Sc./M.Com. plus a First or Second Class B. Lib. Sc. or Diploma in Library Science.

(b) At least ten years experience as Librarian or in a responsible professional capacity in a University Library.

(c) Ph.D degree or equivalent research work in the field relevant to the profession.

(d) In certain situations in academic Libraries, training in computerization/Information Technology/Specialised areas may be taken into consideration.

Being an isolated post the post is open.

SCALE OF PAY Rs. 4500-150-5700-200-7300 and other allowances as per University Rules.

NOTES :

1. The University Librarian shall be responsible for heading the University Library.
2. Age of superannuation of University Librarian shall be as per Government rules.
3. Nine copies of prescribed application forms will be supplied on payment of Rs. 100/- (Rs. 35/- for S.C./S.T./DT/NT/O.B.C.) by crossed Indian Order payable to the Registrar, Nagpur University, Nagpur, with self addressed envelope).
4. Attested copies of necessary testimonials should be enclosed alongwith every copy of the prescribed application form.
5. *Canvassing in any form will be a disqualification.*
6. Last date of supply of blank forms is 31st January, 1997.

REGISTRAR

BHAVNAGAR UNIVERSITY

Advertisement No. 1/97.

Applications are invited for the following posts in the prescribed forms which can be obtained from the University Office by sending (non-refundable) fees of Rs.50/- (Rupees Fifty only) for the general category and Rs. 25/- (Rupees Twenty five only) for the SC/ST candidates by only crossed Demand Draft in favour of "Registrar, Bhavnagar University, Bhavnagar" or by depositing cash during office hours on working days. Last date for receiving applications is 28.2.1997.

Sr. No.	Name of Post.	No. of Post	Pay Scale Rs.	Remarks
1.	Registrar	1	3700-5000	
2.	Chief Accounts Officer	1	3000-4500	
3.	Librarian (Sir p.p. Inst. of Sc.)	1	2200-4000	Reserved for SC candidates

Qualification for the post of University Registrar :

1. A Post-graduate degree with at least 55% marks of its equivalent grade.
2. At least 15 years of experience as Lecturer/Reader of which 8 years should be in Reader's grade with experience in educational administration.

OR

Comparable experience in research establishment and other institutions of higher education

OR

15 years of administrative experience of which 8 years as a Deputy Registrar or an equivalent post.

Qualification for the post of Chief Accounts Officer :

Chartered Accountant or B. Com (with at least Second Class) with Advanced Accounting and Auditing as special subject and having at least 10 years experience of accounts work in a responsible capacity. Preferably in a University or an educational institution.

Working experience as a Deputy Accountant level in a University or as a Class-II Officer in a Government or in a Semi-Government Organisation's Accounts Department

OR

Bachelors degree with 15 years experience as a Dy. Accountant in a University

Qualification for the post of Librarian ·
As per UGC rules

Date · 13.1.1997

REGISTRAR

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ACHARYA N.G.RANGA AGRICULTURAL UNIVERSITY

(Formerly Andhra Pradesh Agricultural University)
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ANAND SARUP

Basic Issues for Educational Planners

K.B. POWAR

Globalisation of Distance Learning System

— Implications for Developing Countries

JAYA INDIRESAN

Networking of Colleges for Research

— Problems and Potentials

P.C. JUNEJA

Supreme Court and the Merit Promotion Scheme

S.V. RAJASHEKHAR REDDY & G. MALLA REDDY

Profile of Distance Learners

— A Case Study of Dr. B.R. Ambedkar Open University

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Editor :
SUTINDER SINGH

Basic Issues for Educational Planners

Anand Sarup*

Anyone reflecting on the past, present and the future of education cannot help concluding that its present shape and orientation was determined by the history of social, political, scientific and economic developments just as its future will be shaped not only by the forces presently at work but also by the interplay of the factors giving shape to the future. What is more, education is not a passive process. As it evolves, it interacts with the environment so that what goes on in schools, colleges and universities plays a significant role in giving shape to the future.

I

These days, a large number of people tend to see education only as a means essentially of imparting knowledge and skills mainly for enhancing the employability of the participants. Undoubtedly, employability is extremely important. However, it cannot be accepted as the be — all and end — all of life. A lot of people take particular types of employment because they need the money it provides. However, all of them have needs and potentials which go beyond their roles as earners or creators of income. In fact, at any time, a significant proportion of people are engaged in working on things they wouldn't be doing, if they had a choice. Such people particularly, but almost everyone else as well, find much of their sense of fulfilment from their relationships with their family and friends, the quality of social, cultural, economic and security environment as well as their aesthetic experiences and creativity. It follows that for leading satisfying lives, people have to have capabilities and sensitivities which may not have anything to do with their employment or employability. Surely, systems of education which focus only, or even mainly, on enhancing the knowledge and skills for employment are doing a poor job of preparing people for leading full and happy lives. Education has to offer much more to help people realise their potentials for exploring the world, experiencing the joys of living, contemplating the mysteries of the universe and of human mind and creating and sharing the poignancy of aesthetic expression.

If we look critically even at employability, we would find that, to a large extent, both employability as well as the nature and quantum of employment in any society depend not so much on individual capabilities but on a multiplicity of factors well beyond the scope of individual initiative. Besides the endowment and distribution of natural resources which are inherent to a country, many economic factors such as the stock and investment of capital on infrastructure and social factors such as, the work environment and ethics and the consumption patterns as well as the propensity to save, also have decisive effect on employment opportunities. Moreover, these days increasingly, external factors, particularly global competition, balance of trade and in-

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**Former Secretary, Education Department, Government of India.*

flow of capital and technology are becoming the determinants of economic performance as well as work opportunities.

In a scenario involving the interplay of such a vast variety of factors, it is well-nigh impossible to predict the spatial, temporal, quantitative and qualitative characteristics of the employment scene with much specificity and certainty. Actually, for most of the countries, scientific discoveries and technological developments and the thrust of international trade and politics, together with the networking of communication, marketing and investment systems, etc, on the initiatives of a dozen world leaders, determine the patterns of demand and supply, access to markets as well as the environment for production Even territorial jurisdictions of sovereign countries and their approaches to national development are being dictated by global forces.

In such circumstances, it is no surprise that long term manpower planning has become an extremely risky business. Not knowing which vocations will absorb how many people with what skills from time to time, reasonably cautious educational planners concentrate less on narrowly structured training programmes and place more reliance on developing broad spectrum abilities which can be put to diverse uses as and when necessary. This, perhaps, is the reason why, in many countries including India, courses for many disciplines such as Architecture, Engineering, Agriculture, Commerce, Economics and even Linguistics and Communication have evolved from purely technological training programmes into broader, science-based system of multi-disciplinary study.

Till recently, technical training had to be provided to make use of techniques and equipment for production. Now more and more of such hardware comes with built-in user friendly software which marginalises the role of operators and makes them dispensable. The coming decades are likely to witness large scale increases in the employment of well-educated software providers and a significant decrease in the number of skilled and vocationally trained people

It is really unfortunate that broad spectrum research oriented study of science and other basic disciplines is being pooh-poohed in India at a time when new technologies buttressed by associated systems are continuously edging out old technologies essentially on the strength of new researches in physics, chemistry, biology and other areas of scientific research. Any country which neglects the development of personnel and the strategies for undertaking research, including inter-disciplinary research, is asking for trouble. Such a country will end up at best as a repetitive importer of technologies but more likely as a screw-driver assembler of imported equipment and knocked down components or a participant supplying cheap labour for multinational entrepreneurs. Without a research base, it will never be able to compete with economies which thrive on the output of front ranking laboratories and academic institutions.

In the above context, it needs to be stated that top-ranking researchers and researches do not materialise in isolated hot-houses. These require a wide base and an interactive environment which cannot be sustained in countries which, while promoting applied disciplines and courses at the expense of research oriented broad spectrum education, also stifle and starve those who work for generating new knowledge and providing new perspectives.

We also need to take note of, and urgently do something about, the fact that a very large number of colleges and many universities are ending up, because of lack of promotional interest and patronage with non-viable faculties for philosophy, social science and humanities One wonders whether anyone has taken a long term view of these trends and developments.

II

If one looks into the crystal ball, one would observe a scenario of a future characterised by an incredibly rapid rate of change. By the time one adjusts to a new reality, it is overtaken by a still newer reality. In several fields capabilities are increasing at a geometric rate of progression. If one looks at the developments in the fields of informatics and communication technologies over the past decade and essays a projection of these trends into the next decades, one is left with no choice but to accept that the world is moving inexorably towards a situation in which all frontiers would crumble before the onslaught of the global leaders in industry, trade and commerce, riding the waves via the satellites into the homes and offices located in the remotest corners of the world.

We know what these invasive technologies have done to the all powerful Soviet Union and its sattelites. Slowly but surely, China too is undergoing a change in character. Gone are the days when we could create enclaves to protect areas, technologies, environments and cultures from the impact of disrupting outsiders. The outsiders are already here, squatting in our drawing rooms, singing their raucous songs, selling their shiny wares and beguiling the unwary as well as the wary with their wanton ways. Upwardly mobile youngsters are already running to catch up with them while the others, weary of their pressure and pace, are throwing *up their hands to the inevitability of change.*

Left to itself, change at this cataclysmic rate can have disastrous consequences comparable in some ways to the invasion of slave traders into East Africa. It can unleash terror and disorder, dismember countries, devastate ecological resources, unsettle the marketing and infrastructural systems, create pockets of abject poverty and unemployment and destroy the established systems of social security. Coping with the onslaught inherent in an externally dictated process of globalization of an economically and technologically underdeveloped country is a challenge of hitherto unprecedented proportions. Can this be done without a massive and concerted effort for economic planning, social engineering and cultural reorganisation? Have the educationists worked out as to what tasks and what inter-disciplinary priorities flow from these imperatives?

III

There is no reason to believe that India and other under-developed countries will not come under pressure from centrifugal forces generated by globalization. Under their influence, many people, communities and regions will seek better deals for themselves. Inevitably, the more advanced states like Punjab, Haryana, Gujarat, Maharashtra or Tamilnadu would want to get unyoked from the debilitating partnership with states like Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh already clubbed together and unabashedly called BIMARU states, to progress rapidly like, and in partnership with, some of the South East Asia countries. At the same time resource-rich but economically backward areas will raise the banner of revolt against their exploitative association with a national system which robs them of valuable resources for a price much lower than what they could command by themselves in the international market.

Again, within the states, it will be asked as to why the rich, the better educated and the more progressive areas and groups should keep carrying the burdens of the weak and the poor? Why shouldn't they wish to do away with the crutches and let the market place and open, unfettered competition, decide as to who should or should not survive? What, they will ask, is so sacrosant about Indian music, poetry, dance, philosophy, social mores, tribals or what passes as its value system that we should make an attempt to protect and salvage these from the tides of externally impelled change?

Today, India stands at the cross-roads. Its fabric is already riven with dichotomous demands — for rapid overall growth versus equitable growth; high cost English medium elite education versus more efficient vernacular mass education; and for commerce, management, engineering and vocational education versus broad-based science, social sciences and humanities education.

We need to articulate all the questions which are boiling up just below the surface in order to plan for education for the coming decades. So far, we have pretended that somehow these questions will be muted if we do look at them. Somehow, we have managed to blunder through with this 'least intervention approach' till now. Perhaps we can manage with it in the future also...... or can we?

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Globalisation of Distance Learning System

Implications for Developing Countries

K.B. Powar*

This paper confines to discussion of some conceptual aspects that have a bearing on the discussions to follow. Before commenting on the requirements of a globalisation programme I would like to briefly address the issues of the changing paradigms of higher education and status of instructional technologies used in distance education.

Changing Paradigms

Change is all-pervasive and inevitable; only the nature of change and the rate at which it takes place varies with time, space and field of operation. In the realm of higher education changes have traditionally been slow, mainly because of its elitist nature and the 'ivory tower' existence of its institutions. However, in the years following World War II, higher education systems, the world over, have undergone transformation from elite systems to mass-systems. At the same time, there have been remarkable developments in communication technology. Consequently changes are more rapid and more radical. The following changes, that are of the nature of paradigm shifts, are especially relevant.

1. The existing model of Higher Education, requiring *selective learning over a specified period* is being replaced by a model of *lifetime learning for all*. This has become necessary because of the changing nature of jobs which now require continuous renewal and updating of knowledge and skills (UNESCO, 1995).

2. Throughout the world Higher Education is undergoing a paradigm shift from an *instruction-centred* college/university model to a *learner-centred* integrated network model which is based on access to learning resources and on student initiative (ICDE, 1996).

3. Distance Education, which is commonly regarded to be an industrialised form of education (Peters, 1983), has evolved from a *Fordist* to *neo-Fordist* and *post-Fordist* forms of production (Farnes, 1993; Raggat, 1993; Rumble, 1995 a, b, c; Peters, 1996).

A natural consequence of the acceptance by society of the 'lifetime learning for all', concept has been expansion of distance/open learning. This is exemplified by developments in the western world, and especially in the United States. In the latter country, as revealed by a survey conducted by the National Center for Educational Statistics in 1995, forty percent of the adult population take adult education courses. Thus, while considerable expansion in distance/open learning education programmes may be expected, these will largely relate to updating of skills and to knowledge enhancement. Courses leading to degrees may probably not develop to the same extent, though open education institutions are expected to take over some load from the institutions of formal education.

The remarkable developments in computer based information technologies have promoted learner-centred learning in both formal and distance/open systems. In the western countries computer-aided learning (CAL) is common, with the site of learning being not only the premises of educational institution but also work-places and homes. The impact of the CAL on distance/open learning is, however, dependent on computer availability and the extent of computer-literacy.

Technologies in Distance Education

Based on the teaching aids used, and the technologies adopted, different generations of distance learning models have been recognised (Garrison, 1989; James and Gardner, 1995). These are :

Generation 1 : Using 'mailable' materials including print materials, and audio and video cassettes.

Generation 2 : Education 'through the air' using broadcasts and telecasts, talkback TV, interactive TV, and tele-conferencing (audio and video).

Generation 3 : Computer-based education using

[Paper based on a Keynote Address delivered at the National Seminar on "Globalisation of Distance/Open Learning System : Possibilities and Problems for Developing Countries", International Unit, Indira Gandhi National Open University, December, 1996.]

Secretary General, Association of Indian Universities, New Delhi-110 002.

software packages, CD-ROM, Multimedia and Internet.

Generation 4 : Technologies of the immediate future, viz., video desktop (2-way audio video) and virtual classrooms.

The mere existence of a technology in a country is not enough. It is difficult to use the technology for distance education unless it is integrated in the lifestyle of the public-at-large. Even in advanced countries like the United States, Japan, United Kingdom and France the promises held out by TV and computer technologies have not been fulfilled (Pottiez, 1994). TV broadcast is often presented as having vast possibilities; even as a panacea for problem relating to mass education and training. The accumulating evidence from all over the world, however, suggests that one-way broadcast television is one of the least effective media of learning, though it is useful for raising awareness and spreading information (Foks, 1995). Hence, it would be pragmatic to largely restrict programmes to be developed for developing countries to print materials and audio- and video cassettes.

Most developing countries do not have reliable delivery systems. The Indian open universities and correspondence course institutions predominantly make use of the print media delivered through government postal services. This is not the most effective mechanism of delivery. Attempts to internationalise education must take this fact into consideration.

Globalisation

Globalisation, simply put, is the 'space-time compression' (Evans, 1995) which brings together nations, cultures and economies, and at the same time increases their interdependency. The process has been promoted by speeding up of transport and of communication, and by increase in economic activity. Globalisation does not necessarily result in homogenization but, on the contrary, may lead to the strengthening of ethnic identities — both local and regional (Edwards, 1994). This is a fact that needs to be kept in view.

An essence of globalisation in collaboration with mutual respect. Successful collaborative efforts require active participation from both sides. A programme based on offering by one side and passive acceptance by the other can have limited success. Inputs from the receiving countries are desirable while adapting programmes. Validation by them, of the course content, in relation to their own identities and backgrounds is necessary. It is also necessary that the receiving countries be actively involved in the setting up (and franchising) of student support services (as counselling centres).

The U.K. Open University and Open Learning Australia have successfully internationalised their operations and marketed programmes essentially developed for domestic learners. The production strategy of the Open University has been described as *Fordist* (Raggat, 1993) primarily because the university operated a mass volume system with a relatively small range of courses and print-runs sufficient for four years. Even after this period some courses have been extended. Moreover, the courses first chosen were foundation courses and undergraduate courses leading to a first degree.

The strategy that needs to be adopted in the case of developing countries has to be *neo-Fordist* or *post-Fordist*. The established courses of IGNOU could be modified to suit the requirements of different regions and cultures (East Africa, Gulf Countries, SE Asia) and be produced in smaller numbers. Recent advances in printing technology should allow for cost-effective production. It may also be a good idea to concentrate on professional programmes aimed at skill-development and updating of knowledge, though in some specific situations degree oriented undergraduate programmes may also be popular.

Suggestions

Internationalisation of distance education programmes should be undertaken only after comprehensive planning and adequate preparation. The following aspects may be kept in view.

1. *While planning programmes and developing learning materials*
   - i. Market research and needs assessment be undertaken to determine what type of programmes are required.
   - ii. In case of most developing countries the requirement is for professional courses that aim at enhancing skills (Management, Electronics, Computer Science, Nursing, etc).
   - iii. Countries with large number of non-resident Indians, on short time assignments, may have a market for first degree programmes.
   - iv. Inputs regarding objectives, content of

courses and instructional aids be obtained from academics/experts and potential employers in user countries.

  v. Course structure needs to be detailed out before development. There is the desirability of having a large number of modules and units covering (a) core aspects, and (b) aspects relevant to a region/culture. It should be possible to substitute (b) in accordance with the requirements.

  vi. Various models of course design and development have to be carefully considered on the basis of appropriateness, effectiveness and economy.

2 *In production of materials*

  i. Course materials should reflect quality of production and must be attractively packaged.

  ii. There should be flexibility in production procedure to ensure meeting of specialised needs.

3. *In conducting programmes*

  i. Ensure that assignments are graded promptly and academic enquiries receive individualised response.

4. *While finalising delivery mechanisms*

  i. Materials need to be despatched promptly as per predetermined schedule.

  ii. The delivery service must be effective. Students must have, at all times, an adequate supply of study material.

5. *Regarding student support services*

  i. It is encouraging if provisions are made for scholarships.

  ii. Franchising of counselling centres be made after careful scrutiny and taking into consideration physical facilities, availability of academic support and objectives of collaborating agency/institution.

6. *In administrative matters*

  i. A well thought-out marketing strategy needs to be developed.

  ii. There should be an easy registration system and enquiries need to be replied to promptly, with a personal touch.

  iii. Examinations must be conducted efficiently and results declared promptly.

Finally, as Lambert (1996, p.27) succinctly states "*Everything that the school provides the student... should reflect high quality, competence, taste and an obvious commitment to service.*"

References

Edwards, R., (1994), From a Distance? Globalisation, Space-Time Compression and Distance Education, *Open Learning*, 9(3): 9-17.

Evans, T., (1995), Globalisation, post-Fordism, and Open and Distance Education, *Distance Education*, 16(2): 256-269.

Farnes, N., (1993), Modes of Production: Fordism and Distance Education, *Open Learning*, 8(1): 10-20.

Foks, J., (1995), Technology and Learning, *Open Learning through Distance Education*, 1(3): 1, 10-11

Garrison, D.R., (1989), 'Distance Education', in Merriam, S.B. and Cunningham, P.M. (Editors), *Handbook of Adult and Continuing Education*, Jossey-Bass, San Francisco.

James, W.B. and Gardner, D.L., (1995), 'Learning Styles, Implications for Distance Learning', in Rossmann, M.H. and Rossmann, M.E. (Editors), *Facilitating Distance Education, New Directions, for Adult and Continuing Education*, 67:19-31.

ICDE, (1996), The Educational Shift: Implications for ICDE and the Distance Learning Community, *Report of the Task Force of the International Council for Distance Education Standing Committee of Presidents*, 22Pp.

Lambert, M.P., (1996), The Distance Education and Training Council: At the Cutting Edge, *Quality Assurance in Education*, 4(4): 26-28.

Peters, O., (1983), 'Distance Teaching and Industrial Production: A Comparative Interpretation in Outline', in Sewart, T., Keegan, D., and Holmberg, B. (Editors), *Distance Education International Perspectives*, p 95-113, Croom Holm, Bechenham Kent.

Peters, O., (1996), Distance Education is a Form of Teaching and Learning *sui generis* Responses to 'Labour Market Theories and Distance Education', *Open Learning*, 11(1): 51-54.

Pottiez, J M., (1994), Distance Education and the New Technologies: A New Adventure in Knowledge and Communication in Husen, Torsten (Editors), *The Role of the University: A Global Perspective*, Pp.185-202, UNESCO, Paris.

Raggat, P., (1993), Post-Fordism and Distance Education — A Flexible Strategy for Change, *Open Learning*, 8(1): 21-31.

Rumble, G., (1995a), Labour Market Theories and Distance Education I: Industrialisation and Distance Education, *Open Learning*, 10(1): 10-20.

Rumble, G., (1995b), Labour Market Theories and Distance Education II: How Fordist is Distance Education? *Open Learning*, 10(2): 12-28.

Rumble, G., (1995c), Labour Market Theories and Distance Education III: Post-Fordism — The way Forward, Open Learning, 10(3): 25-42.

UNESCO, (1995), *Document of Policies for the Change and Development of Higher Education*, UNESCO, Tokyo.

Networking of Colleges for Research

Problems and Potentials

Jaya Indiresan*

Why should college teachers do research?

It is generally observed that college teachers confine themselves to only teaching and do not get involved in research activities. Several arguments are forwarded for this non-involvement in research. One is that the teacher's work load, correction work, tutorials are quite heavy at the undergraduate colleges and leaves no time for research. Second argument put forward is that there are no facilities for research in terms of laboratories or libraries essential for carrying out research. A third argument forwarded is that there is no research guide or climate for research in undergraduate colleges. The fourth argument is, what benefit does a teacher get for carrying out research. This raises the basic question, why should college teachers do research? Teachers in undergraduate colleges are appointed to teach. Will research make the teachers better teachers? *How is research going to be of any use?* This is purely an utilitarian approach but it cannot be denied that is the existent dominant value. It can be argued that teachers undertake research for the pleasure and satisfaction they derive from this activity. It can also be said that teachers undertake research for purely academic reasons. There are teachers who belong to this category. However, the general perception is that teachers will not do anything beyond what is required, unless they see some benefits accruing from this activity. If teachers are interested in career advancement and want to move from a lower level organisation like a college to a higher level institution like the university department or other national level institutions, then, research degree and research publications become important. For promotion in the academia at all levels, research and publications become crucial leading to the cliche "publish or perish". Thus, career advancement is one of the strong motivators for undertaking research.

Provisions for facilitating research

There are several faculty improvement programmes under which provision is made for teachers to avail of leave and financial support and go to recognised universities or their institutions within the country or abroad to acquire higher research degree.

The UGC has several schemes for promoting research in universities and colleges. The Research Scientistship scheme enables scientists/teachers who have shown exceptional talent for research on project basis, to pursue research. Two hundred positions are available at any given time.

To encourage individual research, UGC provides assistance to university/college teachers to undertake either minor or major research projects. The quantum of assistance for major projects in Science, Engineering and Technology is Rs. 5 lakhs and in Humanities and Social Science is Rs.3 lakhs, while for minor projects it is Rs. 30,000 for Science, Engineering and Technology and Rs. 20,000 for Humanities and Social Sciences. Major projects may be undertaken by a group of teachers.

The number of projects approved by the UGC and grants released by it during the year 1993-94 is shown below.

Major and Minor Research Projects — 1993-94

Scheme	Projects approved	Grants released (in lakhs)
Major Research Projects		
1. Humanities & Social Sciences	170	216.16
2. Science	142	285.82
3. Engg./Technology	3	6.97
Minor Research Projects		
1. Humanities & Social Science	182	28.41
2. Sciences	141	56.48
3. Engg./Technology	Nil	Nil

Source : UGC Annual Report 1993-94

The above data does not indicate how many of these projects are in the university departments and how many in the affiliated colleges. There are over 8000 colleges with approximately 2.25 lakh teachers and there are nearly 230 universities with 65,000 teachers. Nearly 80% of the teachers are in affiliated colleges. Considering this large number of teachers, the number of projects approved by the UGC is very small. Further, it is speculated that the share of the projects approved for college teachers would be very small indeed.

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The Career Awards Scheme of UGC aims at identifying young talented teachers of not more than 40 years of age (50 years in the case of women candidates) to devote themselves to research with lesser teaching responsibilities. Ordinarily career awards are offered for a period of three years to lecturers and readers in universities and colleges who have doctoral/post doctoral or other equivalent professional training.

UGC annually awards research associateships to undertake research in the field of Science, Humanities, Social Sciences and Engineering and Technology, Gandhian Studies, Nehru Studies and National integration to those who have completed their Ph.D. within the last ten years and have shown talent and competence for independent post doctoral research work. Preference is given to those researchers/teachers who have independently published research work to their credit.

Apart from the UGC there are several other sources of funding like the CSIR, ICSSR, various ministries, etc. These schemes have been introduced with the belief that teachers oriented in research would make better teachers. Unfortunately, except for some deeply research oriented teachers, these advanced degrees in research remain a mere paper qualification for career advancement. The research activities come to an abrupt halt once the degree has been acquired and promotions secured. At times, there are genuine reasons why teachers are unable to carry on their research interests. It may be the area they have chosen for their research study has no relevance to their teaching. There may not be facilities available to carry on the research work in their own colleges. There is no incentive or reward for continued research efforts, except one's own self satisfaction. Thus, there are several factors which act as inhibitors to research in an undergraduate college setting.

For those who are committed and have a passion and urge to do research funding is not a barrier at all. Good scholars and researchers do not have to go chasing for funds. Once their reputation is known funds will flow freely. As far as research is concerned, especially at the college teachers level, it is the attitude and urge that is crucial.

Level of Research

There are several ways in which we could examine the levels of research. It could be a large project conducted at a very sophisticated level applying all the rigours of a scientific study. There could also be studies carried out with less sophistication and rigour when the objective is to get a quick understanding of the problem of issue for immediate problem solving purposes.

Research could also be carried out at different levels, namely, individual, departmental, institutional, national or international, depending on the purpose, facilities, contacts, etc. Mostly research is carried out at individual level either for acquiring degrees or for enhancing career advancement prospects.

Team research does exist usually in big laboratories or university departments. In this case the research project is given to the department or to senior academics and they collect a team around them and the research is carried out. It could also be a sponsored large research project which necessitates a large number of persons working jointly on the given problem. The teams could be formed across the various departments depending on the nature of the problem.

Another type of research is collaborative research where different individuals or institutions work jointly on different aspects of an identified research project. This can be distinguished from networking where individuals or institutions carry out independently and simultaneously an identified project in a commonly agreed format. This enables the individual projects to be put together to arrive at a larger canvas.

Advantages and Limitations of Networking

Networking for research has several advantages, especially for college teachers who have limited facilities. In this paper, I will be confining myself to discussion of research in the area of social science for that is the area I am familiar with. Perhaps, the issues raised may be applicable to other areas of research also.

First of all it brings teachers together and that itself is a big advantage. Second, networking facilitates sharing of data and hence more effective utilization of the data. The collection of data specially empirical and primary data is very expensive in terms of time, finances and human resources. Thirdly, India being a very heterogeneous and pluralist country, networking facilities in bringing out both regional differences and commonalities. Fourthly, instead of duplicating or replicating studies in different parts of the country, networking saves on time, energy and promotes better utilization of resources. Fifthly, networking can be done on a large scale or cn a small scale depending upon the problems and the resources that can be generated.

Networking also has its problems and limitations. The first major problem is coordinating the efforts of researchers, especially if they are geographically widely spread out. Second, getting researchers to agree to a common format and adhere to it. Third, making researchers to keep to an agreed time frame. Some will go faster than the others and slow ones will hold back the progress of the fast ones. The fourth problem is the question of drop outs. At the beginning there is lot of enthusiasm and researchers get together and as the study progresses due to various factors related to funding, time availability, other more interesting things coming up, people moving out etc, there are several dropouts hampering the progress of research.

In spite of all these impediments, several projects big and small, have been successfully completed through networking. Here I give some examples of research carried out in the networking mode.

St. Agnes College Experiment

This brief report on the above experiment could be classified under the small scale, not so sophisticated but quick result yielding, limited research study involving several colleges from the city of Mangalore.

As part of the Platinum Jubilee celebrations the college wanted to conduct a three day workshop on "Women Envision the Third Millennium: Education for Progress" This three day regional workshop on women's development included the states of Goa, Karnataka and Kerala. St. Agnes College wanted to enlist the participation of neighbouring colleges through collaboration, cooperation and coordination among the city colleges. The objective was also to establish links with other colleges.

In this workshop it was decided to hold a seminar session on the "Position of Women in Different Communities of the South Karnataka District : An Analysis." For this seminar, it was decided to present research based papers on the chosen topic. With the help of two senior academics with expertise in research, a research design was drawn up. Data was to be collected by interviewing three generations of small samples of grandmothers, mothers and daughters to study the status, the education, decision making power, the level of freedom in marriage and in running the family, the attitude towards girls, their treatment in their parents' home, their marital status, etc. Guided by the teachers, teams of students carried out the interviews . The students were briefed about the procedures to be adopted for collecting data. Deadlines were given for collecting the data and then teams were given guidelines on how to analyse the data and point out trends and commonalities.

Thus, by networking the identified city colleges, extensive data were obtained, analysed and the research findings were presented in the workshop. This is an example and a model that may be followed through networking, for arriving at a quick understanding of an identified issue through data sharing.

An Experiment on Networking at NIEPA

In an effort to revamp the existing training programme meant for the district education officers, it was decided by NIEPA to carry out training need analysis. One district each was chosen from five different states and one researcher from each state was also identified to be involved in this research study. Through workshops a common research format was evolved with all the researchers participating. Then, as a second step, both primary and secondary data were obtained from five districts. At the next stage, the researchers met again in a workshop mode and collated, analysed and synthesised the data to identify the unique needs of the different districts and also to elicit the common training needs. This research input was very valuable in redesigning the training programmes for the district education officers.

This is another model of networking for a specific purpose across the various parts of the country.

The Girl Child Project

Another very exciting and elaborate study that was carried out using this networking mode was the National Study on the Girl Child sponsored by the Department of Women and Child Development. All the 22 Women's Studies Centres located in the various universities were involved in this national study. Here again a common research design was evolved, questionnaires were developed for collecting data. The researchers from the various Women's study centres were trained in several workshops about the procedures for data collection, data entry, data analysis, etc. As was pointed out earlier about the problems of networking, there were some drop outs from this project. Some progressed faster than the others. However, a large number of Women's Study Centres did complete this study and each one brought out a report bringing out the regional diversities. This is yet another example of how a theme of common interest across the country could be carried out simultaneously in the geographically different regions of the country to bring out the cultural differences and similarities. If this study had to be conducted by a single agency or duplicated or replicated it would have taken a long time. Networking of research has the advantage of simultaneously conducting research in different parts of the country to get a comparative understanding on the identified issues.

Teachers Work Satisfaction and Role in Educational Change

This is yet another experiment in networking conducted across 16 countries by the cross cultural consortium from the University of Michigan. For the first part of the study an elaborate questionnaire was developed for studying the various aspects of the work satisfaction of teachers at the higher secondary level. The researchers from the 16 countries collected data according to the prescribed research design and on the common questionnaire. Again the data were coded in a common format and centrally analysed to bring out the commonalities and differences between the different countries. At the second stage of the study, a commonly agreed interview format was developed for obtaining data from teachers about their perceived role in the planning and implementation of educational change. At research workshops, the common coding format was evolved and the researchers analysed the data using this coding format to identify the unique and common features and the issues in the different countries. This is yet another example of networking at an international level across the countries spanning the east and the west, north and the south.

These are just a few examples of how networking can be a useful strategy for carrying out research. As the examples indicate the networking can range between few colleges in a given city to several countries across the globe.

Implications

One of the criticisms about the undergraduate programmes in colleges is that the students do not find the syllabus relevant or meaningful. This is because of several reasons. One, the syllabus is centrally controlled and is so general that the students see no direct relationship to their life. Another reason is that it takes a long time for any syllabus to be modified that a lot of material taught is outdated. In the affiliating system, the teachers feel they have very little freedom in "covering" the syllabus. However, there is a difference between 'covering' a syllabus and 'transacting' a syllabus. If teachers are genuinely interested in transacting the syllabus, they can always 'update' it by providing the state of the art in the given subject without waiting for the syllabus to be updated officially. Similarly, if the syllabus is perceived to be too general and do not reflect the local issues, especially in social science subjects, the teachers can build in material of local interest to make the subject relevant and meaningful.

All this requires 'research' orientation on the part of the teachers. This is where small research projects carried out in the network mode can be very useful. It is evident that research under the network mode is desirable. The few examples given here, and there must be other such studies being carried out, show that it is possible to undertake research in the network mode. However, one sparrow does not make a summer. Is it possible to enthuse many sparrows, so that we can have a real summer? That is a million dollar question and a challenge!

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communication should, however, be brief and to the point.

Supreme Court and the Merit Promotion Scheme

P.C. Juneja*

The apex court, by its decisions usually sets the controversies at rest and the principles of law laid down by it are normally welcomed by the parties to the controversy. The judges look into the problem thoroughly, weigh the arguments for and against and finally settle the point. Since, apex court is the last appellate authority, it is expected that all the pros and cons have been considered and no scope for injustice has been left. But in *Rashmi Srivastava* Vs *Vikram University* (AIR 1995 SC 1694), the Supreme Court, instead of settling the dust has raised a storm. The teaching community, which teaches and shapes the students into good future citizens, is itself involved in mud-slinging on each other. The junior teachers, out of whom many have been students of their senior colleagues have started ridiculing them because they were promoted under Merit Promotion Scheme.

Earlier the head of the Dept. used to act as a feudal lord and would not allow any Professor's post to be created so that there was none equal to him in the dept. and his feudal superiority was intact. Some posts of Readers created in the deptts. would act as the proverbial carrot for lecturers and there was a race in sycophancy amongst the lecturers to get that post. The serious, studious and sincere teachers would normally lose the race.

To check the academic feudalism, two schemes were introduced at different times. Firstly, rotation amongst headship/chairmanship was introduced. This abolished permanent headship. The headship/chairmanship would go to the senior most Professor or Reader by rotation after three years and he will act on the aid and advice of the departmental committee.

Secondly, to remove stagnation and to reward suitably those Lecturers/Readers who are continuously engaged in research and teaching the University Grants Commission introduced Merit Promotion Scheme (MPS). The main objects of the scheme were :

i) to recognise the outstanding work done by university teachers in the area of research and teaching, and

ii) to provide reasonable opportunities to teachers for professional advancement, who merit academic recognition, on competitive basis.

This scheme was an answer to the question that where four equally competent and senior persons were eligible for promotion and only one vacancy existed and one out of four was selected, others could be promoted under Merit Promotion Scheme in recognition of their merit which was to be judged by a special procedure laid down by the UGC. The work of the teacher was to be evaluated by two referees and if their report was positive, he was to be interviewed by a regular selection committee constituted by the Vice-Chancellor as is constituted for direct selection of Readers and Professors, and if that selection committee finds him suitable, he would be promoted as Reader or Professor as the case may be. Since no new post was to be created, he would carry his post and in case of his retirement or death, only the post from which he was promoted, would be declared vacant.

Merit Promotion Scheme promised adequate reward for research and teaching, eradicated unhealthy competition in sycophancy for promotion to the next post, encouraged teachers for research and improved the academic atmosphere. No body even thought of the distinction being made between promotees and direct selectees and the universities treated them equally. The Professors and Readers promoted under MPS were being offered Headships and Deanships as per their turn. There was only one list of seniority for Professors through MPS and Professors through direct selection. Same was the case with Readers. As heads of depts., the Professors through MPS have been sitting as members in the selection committee for the selection of Professors. The Professors and Readers promoted under Merit Promotion Scheme did not apply for Professorship or Readership whenever the vacancy came and allowed their junior colleagues to apply and avail the opportunity of promotion to the next post.

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The Professors and Readers under MPS could never imagine that one day the Supreme Court will turn their cart upside down and they will be thrown out of the cadre, that the Professors selected by them would become senior to them and they will be put to ridicule and embarrassment in such a manner that despite their seniority, long teaching experience and research work they will be dubbed as juniors to those whom they selected or for whom they paved the way for being selected by withdrawing from the competition, and that the same juniors would lobby for making them ineligible for the posts of Headship/Deanship and for ousting them from the membership of academic bodies.

The Supreme Court in *Rashmi Srivastava* Vs. *Vikram University* (AIR 1995 SC 1694) has upset the *applecart on a very technical ground, that University* Act contemplated only one source of recruitment of university teachers, namely, Professors, Readers and Lecturers i.e. through direct selection and though the Merit Promotion Scheme was adopted by the universities, the Act was not amended to recognise the source of Merit Promotion alongwith the source of direct recruitment, and so the Readers and Professors promoted under MPS would be treated as ex-cadre and cannot form part of the *inter se* seniority list of Professors and Readers, recruited through direct selection. This technicality has put the senior teachers to embarrassment without any fault of theirs. After being promoted under MPS they legitimately expected to be treated at par with those recruited directly in every respect, as the object of Merit Promotion Scheme was to remove stagnation and give due recognition to the work and experience of teachers who could not be promoted because of non existence of a vacancy. Supreme Court *which is known for innovative techniques to* help the humanity seems to have erred in the case of teachers. The court, if unlike universities, was of the opinion that Merit Promotions were not strictly according to the Act, might have regularised these *promotions because of long practice followed by the* universities and legitimate expectations of promotees, and could have resorted to doctrine of prospective overruling for future promotions under MPS. The court could have clarified, that promotions under MPS after its decision would be treated as ex-cadre posts and the promotees would not be entitled to the benefits to which cadre Readers and Professors would be entitled. Then the teachers would have foreknown the consequences of getting promotion under MPS.

This judgement has belied the legitimate expectations of those who were promoted under MPS or any other scheme before the date of judgement. It has also created dissensions amongst the teachers, and since direct recruits have become senior to merit promotees, the person who was selected by the selection committee in which a merit promotee professor and head was sitting as member, is now declared senior to him. In short the selected one has become senior to the selector.

The judgement has lowered the dignity of merit promotee Professors and Readers, derecognised their merit, and has given an opportunity to administrative staff, the fixers in the deptts. and unacademic academicians on the campus to ridicule those senior teachers who were promoted under MPS. The judgement has also raised a finger of *doubt on the legality of those selections where merit* promotee Professors and Heads/Deans were sitting as members of selection committees. If a merit promotee Professor cannot be Head or Dean, he cannot sit in the selection committee. And wherever he had been part of any selection committee, the selections made by that committee are illegal and of no effect. This judgement is going to have far reaching consequences on the interest of teachers, their efficiency and morale and consequently the academic standards and atmosphere.

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Anjila Saxena
DIRECTOR

PROFILE OF DISTANCE LEARNERS
A Case Study of Dr. B.R. Ambedkar Open University

S.V. Rajashekhar Reddy*
G. Malla Reddy**

Dr. B.R. Ambedkar Open University

Dr B.R. Ambedkar Open University is the first open university to be established in the country in August 1982 with an Act of the A.P. State Legislature. The main objectives of the university are :

i) To provide educational opportunities to those students who could not take the advantage of conventional institutions of higher learning;

ii) To provide educational opportunities for higher education to a large segment of the population who are in employment, women including housewives and adults, who wish to update their education or acquire knowledge in the academic fields;

iii) To provide openness with regard to eligibility for enrolment, choice of courses, methods of learning, conduct of examinations, and operations of programmes;

iv) To provide programmes complementary to those of the existing universities in the state in the field of higher learning so as to maintain highest standards on par with those of the best universities in the country, etc.

To fulfil its objectives, the university is functioning with the motto of "Education for all". Its slogan is put forth as "Education *at your doorstep*". The university is providing access to higher education to everyone — housewives, prisoners, pensioners etc; an opportunity to learn while earning and opportunities to study for parents and children together.

The university has a jurisdiction throughout the state covering an area of 2,75,068 Sq.Kms. consisting of 23 districts of three regions viz. Andhra, Rayalaseema and Telangana. It is serving its student community with a wide network of 102 study centres spread all over the State offering different programmes leading to the awards in certificate, undergraduate, postgraduate diploma, postgraduate programmes & Research programmes.

Profile of Students

A study of the profile of students in Open Universities is very important as these institutions are student centred. Such a study gives the nature and composition of the students which helps a university to design suitable programmes and take proper decisions with regard to its policies concerning the provision of student support services. It also provides for the retrospection of the university in fulfilling its objectives like democratising education and taking the higher education to the Socially and Economically backward masses of the society. It also serves the purpose of knowing about the distance learners by the educational policy makers to design the need based practical policies.

In the light of the above aspects, this paper seeks to study the profile of the students of Dr. B.R. Ambedkar Open University. As the students of undergraduate programmes enter the university at the first year level, it is intended to concentrate on the first year students only. This will give the complete picture about the students studying in undergraduate programmes of the university.

The profile is studied in terms of enrolment pattern; age-wise, occupation-wise study; social status; special categories; marital status; formal and non-formal streams and choice of medium of study.

Methodology

The study period covers 7 academic years from 1988-89 to 1994-95 for which the data is available. The year 1988-89 is taken as the base year as the published data is available only from this year. The data is mainly gathered from the Database of Dr. BRAOU series:1-6, published by Centre for Evaluation of Dr. B.R. Ambedkar Open University. The data pertaining to the year 1994-95 is collected from the records of the university computer centre. This study is the population study and therefore, there

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will be no errors of randomisation. Simple statistical techniques like 'the percentage' and 'average' are used to analyse the data.

Enrolment of Students

The students enrolment is studied both at the university level and regional level (Table 1). Regional level study covers all the regions of the state i.e. Andhra with 9 districts, Rayalaseema with 4 districts, Telangana with 9 districts and twin cities of Hyderabad and Secunderabad. Populationwise these regions cover 43.20% (Andhra), 17.57% (Rayalaseema), 34.50% (Telangana) and 4.73% (Hyderabad) of the state population as per the 1991 census.

The university's focal clientele consists mainly of undergraduate students. The main characteristic feature of Distance Education is flexibility and it is followed to the greater extent with regard to undergraduate students viz., eligibility for enrolment, age of entry, choice of medium and courses, system of writing examinations, choice of study centres, etc. This paper studies different aspects relating to undergraduate students of Dr. B.R Ambedkar Open University.

The students are admitted to undergraduate courses from two streams. They are formal or direct and non-formal or through an Eligibility Test (ET) conducted by the University. The direct stream of students constitutes those who take admission after completing the 10+2 (equivalent to Intermediate) of formal education. The second stream constitutes those who take admission after qualifying through the Eligibility Test conducted by the University every year. Such students do not possess the required formal qualifications. The only condition for this stream is that they have to complete a prescribed minimum age limit, which is presently 18 years. Earlier this minimum age requirement was prescribed as 21 years as per the UGC guidelines.

The University admitted its first batch of students in August, 1983 for the academic year 1983-84. Total students admitted that year were 6231. This figure rose to 31,765 by the academic year 1994-95 registering a growth of 5.1 times over the first academic year.

Table 1 shows that there is a sudden increase in the enrolment in the year 1990-91. This may be due to the reduction in the age limit from 21 years to 20 years for writing eligibility test (non-formal entry age limit), and in the year 1994-95, this age limit was further reduced to 18 years resulting in a moderate increase of 8.5% in the total enrolment

The region-wise analysis of enrolment shows that Andhra region accounts for a minor share in the

Table 1 : Region-wise Enrolment of I Year Students

Academic Year	*Andhra*	*Rayalaseema*	*Telangana*	*Twin cities*	*Total (University level)*
1988-89	3616 (21.46)	2503 (14.85)	4885 (29.00)	5845 (34.69)	16849 (100)
1989-90	3380 (20.58)	2657 (16.18)	5075 (30.90)	5310 (32.34)	16422 (100)
1990-91	4587 (16.68)	4036 (14.68)	10067 (36.61)	8806 (32.03)	27496 (100)
1991-92	4574 (14.10)	5360 (16.51)	13495 (41.59)	9018 (27.80)	32447 (100)
1992-93	4274 (12.03)	6776 (19.08)	14155 (38.86)	10308 (29.04)	35513 (100)
1993-94	3984 (13.63)	6229 (21.30)	10436 (35.67)	8606 (29.42)	29255 (100)
1994-95	4257 (13.40)	6832 (21.50)	10277 (32.35)	10399 (32.75)	31765 (100)

Figures in brackets indicate percentage to total.

total enrolment ranging from 12.3% to 21.46%. Moreover, its share has been decreasing from 21.46% to 13.40% during the period under study. This may be attributed to the strong hold of the Andhra University Correspondence institute in this region. The Rayalaseema region also accounted for a minor share (ranging from 14.85% to 21.5%) but its share has been increasing during the period under study. This may be because of non-availability of educational facilities and backwardness of the region, etc. The Telangana region accounts for a lion's share ranging from 29% to 41.59%. The twin cities also account for a major share ranging between 27.80% and 34.69%. It is to be noted that the university is framing well in Telangana and twin cities in spite of strong Distance Education institutes of Kakatiya and Osmania Universities in this area.

The further investigation revealed that although population-wise Andhra region is the largest with 43.20% of population, it accounted for a minor share in the enrolment of the students. Population-wise there is a disproportional enrolment in Telangana and Rayalaseema regions The twin cities accounted for an average 31.25% enrolment of its population. This may be because of better awareness among the urban people about the Distance Education, the existence of different employment centres in the twin cities, etc. The reason for the disproportionality of enrolment in Telangana region may be attributed to the fact that for several decades this region had been denied of higher education facilities coupled with poverty, feudal rule, etc

An analysis of distribution of study centres reveals that Andhra region with only 16% of students got 26% of study centres, twin cities with 31% of students got 18% of study centres, the Telangana region with 35% of students got 35% study centres, whereas Rayalaseema region with 18% of students accounted for 19% of study centres.

Thus it can be concluded that Andhra region has got more proportional and twin cities less proportional share of study centres.

Formal and Non-formal Streams of Students

Th data pertaining to modes of admission i.e. through Eligilibility Test (Non-formal) and Direct (Formal) during the period under study is given in Table 2.

Table 2 : Mode of Admission

Academic Year	*Eligibility Test*	*Direct*	*Total*
1988-89	11859 (70.38)	4990 (29.62)	16849 (100)
1989-90	9675 (58.91)	6747 (41.09)	16422 (100)
1990-91	18266 (66.43)	9230 (33.57)	27496 (100)
1991-92	24627 (75.90)	7820 (24.10)	32447 (100)
1992-93	24602 (69.28)	10911 (30.72)	35513 (100)
1993-94	18823 (64.34)	10432 (35.66)	29255 (100)
1994-95	N.A.	N.A.	31765

Figures in brackets indicate percentage to total
N.A. - Not Available.

Table 2 shows that significantly around two-thirds of the students are drawn from non-formal stream. The share of non-formal students ranged between 58.91% and 75.90% and that of formal stream 24.10% and 29.62%. The table also shows that the student enrolment with the requisite formal qualifications is on the increase because the system may be more convenient and flexible to meet different needs of the students.

Thus, it can be concluded that even though the formal stream enrolment is showing increasing trend, the students without formal qualifications are benefited by seeking admission into higher education. It can be said that the university has been able to achieve its objectives to a great extent by providing increasing access to higher education to those who are otherwise deprived of.

Age-wise Analysis

The students are classified into 4 groups teenage (upto 20 years), Young age (21 -35 years), middle age (36 - 50 years) and old age (above 50 years) and the data relating to them is presented in Table 3.

Table 3 shows that the students of young age constitute a major percentage of total enrolment followed by teenage group. It is to be noted here that most of the teenage students come from formal stream. Further analysis of the table reveals that the percentage of teenage students has increased from 9.84% to 29.58% indicating continuous increase in the enrolment of direct students. The share of middle age and old age students is very less. Thus, it can be concluded that the university has not been able to attract middle aged and old aged people in any significant number. These people may be viewed as really self motivated persons who wish to gain something which they missed in their prime age.

Occupation-wise Study

For the purpose of studying the occupational profile of the students, they are broadly classified into two groups i.e. unemployed and employed. The employed are further classified as employed in agricultural sector, industrial sector, service sector and other ministerial service. The data relating the distribution of students by occupation is presented in Table 4.

Table 3 : Age-wise Study of Students

Academic Year	*Not Available*	*Upto 20*	*20-35*	*36-50*	*Above 50*	*Total*
1988-89	101 (0.60)	1657 (9.84)	13427 (79.70)	1611 (9.56)	53 (0.3)	16849 (100)
1989-90	172 (1.05)	2417 (14.72)	12560 (76.48)	1240 (7.55)	33 (0.20)	16422 (100)
1990-91	13310 (48.41)	4031 (14.66)	9223 (33.54)	899 (3.27)	33 (0.12)	27496 (100)
1991-92	468 (1.44)	8555 (26.37)	21593 (66.55)	1773 (5.46)	58 (0.18)	32447 (100)
1992-93	705 (1.98)	10381 (29.23)	22727 (64.00)	1657 (4.67)	43 (0.12)	35513 (100)
1993-94	417 (1.43)	8653 (29.58)	18859 (64.46)	1284 (4.39)	42 (0.14)	29255 (100)
1994-95	N.A.	N.A.	N.A.	N.A.	N.A.	31765

Figures in brackets indicate percentage to total
N.A. : Not Available.

Table 4 : Occupation-wise Study

		EMPLOYED				
Academic Year	*Un-employed*	*Agricultural Sector*	*Industrial Sector*	*Service Sector*	*Others (Ministerial Service)*	*Total*
1988-89	11532 (68.44)	509 (3.02)	670 (3.98)	587 (3.48)	355 (21.08)	16849 (100)
1989-90	11802 (71.87)	399 (2.43)	345 (2.10)	472 (2.87)	3404 (20.73)	16422 (100)
1990-91	21223 (77.19)	639 (2.32)	600 (2.18)	619 (2.25)	4415 (16.06)	27496 (100)
1991-92	23982 (73.91)	1112 (3.43)	646 (1.99)	553 (1.70)	6154 (18.97)	32447 (100)
1992-93	27729 (78.08)	1129 (3.18)	528 (1.49)	417 (1.17)	5710 (60.08)	35513 (100)
1993-94	19918 (68.09)	2692 (9.20)	1200 (4.10)	562 (1.92)	4883 (16.69)	29255 (100)
1994-95	N.A.	N.A.	N.A.	N.A.	N.A.	31765

Figures in brackets indicate percentage to total.
N.A. : Not Available.

Table 4 reveals that most of the students are unemployed and their percentage ranges between 68.09 and 78.08. Though the university's objective is to provide educational facilities to employed population, most of its students are unemployed, indicating that its objective in this regard has not been fulfilled. The employed students come mostly from ministerial services followed by those working in service sector like teaching and nursing. Those employed in agricultural sector and industrial sector constitute very less share. This may be due to non-availability of vocational/technical courses in the university to meet their requirements. It is suggested that the university should establish some study centres exclusively in the industrial & agriculture based areas and offer specialised courses, so that students from these sectors may join the university. For example, the population working in coal mines of Kothagudem, Godavari Khani, etc. needs some skilled and semi-skilled programmes to realise its professional aspirations.

Social Status of Students

The students are classified as BCs, SCs, STs and others and the data relating to them is given in Table 5

Table 5 reveals that around 50% students belong to forward class, followed by BC students which is around 35%. Among Scheduled Caste and Scheduled Tribe students, the SC students show a better enrolment figure and the ST students account for a very insignificant proportion. The table further reveals that the percentage of SC students is on increase on an average of 11.80% but it is less when compared to the percentage of SC population in the state i.e., 15.92 (as per the 1991 Census). It is to be noted that the ST students' average share is 1.92% and their enrolment is very less when compared to its population share of 6.31% (as per 1991 Census).

Thus, it can be concluded that the university has not yet been able to fully realise its objective of catering to the educational needs of socially backward sections particularly STs. It is suggested that the university should reach the tribal areas by opening the new study centres providing additional facilities and remedial enrolment programmes.

Special Categories of Students

The special categories of students consist of physically handicapped, blind, Ex-service men and prisoners.

Table 5 : Social Status of the Students

Year	*Backward Class*	*Scheduled Caste*	*Scheduled Tribe*	*Others*	*Total*
1988-89	5297 (31.44)	1551 (9.20)	235 (1.40)	9766 (57.96)	16849 (100)
1989-90	5414 (32.97)	1445 (8.80)	208 (1.27)	9355 (56.96)	16422 (100)
1990-91	9558 (34.76)	3048 (11.08)	582 (2.12)	14308 (52.04)	27496 (100)
1991-92	11832 (36.47)	3899 (12.01)	643 (1.98)	16073 (49.54)	32447 (100)
1992-93	13433 (37.83)	4361 (12.28)	676 (1.90)	17043 (47.99)	35513 (100)
1993-94	10977 (37.52)	4186 (14.31)	672 (2.30)	13420 (45.87)	29255 (100)
1994-95	11781 (37.09)	4738 (14.92)	776 (2.44)	14470 (45.55)	31765 (100)

Figures in brackets indicate percentage to total.

(Contd. on page 20)

MAJOR ECONOMIC

Growth Rate of GDP (percent per annum)

	Base Year	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia		5.6	5.4	1.7	5.4	4.6	5.8	5.8	6.0	6.4
Bangladesh	1985	4.3	6.6	3.4	4.2	4.5	4.2	4.1	3.6	5.5
Bhutan	1980	7.5	6.6	3.5	4.1	6.3	6.5	5.5	...	...
India	1980	5.6	5.4	0.8	5.1	5.0	6.3	6.2	6.4	6.6
Maldives	1985	12.1	16.2	7.6	6.3	6.2	6.6	5.8	...	..
Nepal	1975	4.9	4.9	6.4	4.6	3.3	7.3	2.3	5.6	5.2
Pakistan	1981	6.1	4.6	5.6	7.7	2.3	3.8	4.7	5.5	5.8
Sri Lanka	1982	4.2	6.2	4.6	4.3	6.9	5.6	5.6	5.2	5.5

Growth Rate of Per Capita GDP (percent per annum)

	1990	1991	1992	1993	1994	1995	1996	1997	Per Capita GNP (US$) 1994
South Asia	3.5	– 0.2	2.5	1.7	3.7	5.9	4.3	3 6	
Bangladesh	5.3	1.7	2.3	2.4	2.3	1.7	2.1	3 1	230
Bhutan	3.8	0.4	0.9	3.2	3.3	2.3	...	..	400
India	3.7	– 1.0	2.2	2.0	4.4	7.2	4.7	3.8	310
Maldives	13.9	2.8	2.8	2.8	3.3	2.4	...	..	900
Nepal	2.8	4.3	2.5	1.2	5.1	0.2	3.4	3.0	200
Pakistan	1.3	2.3	4.6	-1.1	0.1	0.9	3.0	2.8	440
Sri Lanka	5.0	3.0	3.0	5.7	4.4	4 4	4.1	4.4	640

Growth Rate of Value Added in Agriculture (percent per annum)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia									
Bangladesh	2.6	10.0	1.6	2.2	1.8	0.3	-1.6	1.0	2.5
Bhutan	4.9	3.1	3.2	-1.8	3.9	2.0	3.2	...	...
India	3.1	3.8	-2.3	6.0	3.3	4.9	0.5	3.0	3.8
Maldives	5.8	9.4	6.3	-1.8	-0.1	2.4	...	...	...
Nepal	4.6	5.8	2.2	-1.1	-0.6	7.2	-0.7	5.5	4.5
Pakistan	4.1	3.0	5.0	9.5	-5.3	2.9	4.9	6.0	4.5
Sri Lanka	2.9	8.5	1.9	-1.6	4.9	3.3	2.3	2.3	2.7

NDICATORS : SAARC Countries - I

Growth Rate of Value Added in Industry (percent per annum)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia									
Bangladesh	5.6	6.4	4.3	7.1	8.0	7.8	8.5	5.5	9.5
Bhutan	12.3	1.7	2.4	12.9	9.8	16.1	8.6	...	...
India	7.1	7.2	-1.1	3.9	4.2	8.3	12.0	9.4	8.6
Maldives	14.4	15.6	9.8	8.3	8.2	6.6	...	...	...
Nepal	5.5	2.8	12.5	16.8	4.8	8.4	2.9	5.0	5.0
Pakistan	7.6	6.4	6.9	7.7	5.6	4.7	5.0	5.7	7.0
Sri Lanka	4.7	7.8	4.1	7.1	9.8	8.1	8.0	7.9	8.5

Growth Rate of Value Added in Services (percent per annum)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia									
Bangladesh	5.4	4.0	4.6	4.8	5.3	5.8	5.9	4.3	5.4
Bhutan	8.1	13.2	3.6	6.6	8.8	5.7	5.8	...	...
India	6.8	5.2	4.7	5.3	6.8	6.0	6.1	6.4	7.0
Maldives	15.5	19.6	7.4	9.0	7.8	8.1	...	...	...
Nepal	...	4.7	9.8	6.5	7.3	6.8	5.4	6.0	6.0
Pakistan	6.6	4.5	5.2	6.8	4.6	3.8	4.4	5.1	5.7
Sri Lanka	4.7	4.2	6.2	5.3	6.2	5.1	5.4	4.8	4.8

Sectoral Share of GDP (percent)

	Agriculture			Industry			Services		
	1970	1980	1995	1970	1980	1995	1970	1980	1995
South Asia									
Bangladesh	...	49.4	32.8	...	14.8	19.6	...	35.8	47.6
Bhutan	...	56.7	37.6	...	12.2	28.3	...	31.1	34.1
India	44.5	38.1	27.8	23.9	25.9	31.1	31.6	36.0	41.2
Maldives	...	...	...	...	...	...	...	...	...
Nepal	...	61.8	41.9	...	11.9	19.3	...	26.3	38.8
Pakistan	40.1	30.6	24.0	19.6	25.6	27.0	40.3	43.8	48.9
Sri Lanka	30.7	26.6	19.8	27.1	27.2	31.3	42.2	46.2	48.9

Source : *Asian Development Outlook 1996 & 1997*, Asian Development Bank 1996.

(Contd. from page 17)

Table 6 : Special Categories of Students

Academic Year	*Physically Handicapped*	*Blind*	*Ex-Service Men*	*Prisoners*	*Total*
1988-89	38 (26.95)	17 (12.06)	45 (31.91)	41 (29.08)	141 (100)
1989-90	39 (44.83)	16 (18.39)	20 (22.99)	12 (13.79)	87 (100)
1990-91	88 (48.09)	24 (13.12)	44 (24.04)	27 (14.79)	183 (100)
1991-92	101 (49.03)	13 (6.31)	53 (25.73)	39 (18.93)	206 (100)
1992-93	109 (46.38)	35 (14.89)	56 (23.84)	35 (14.89)	235 (100)
1993-94	46 (40.71)	5 (4.42)	18 (15.93)	44 (38.94)	113 (100)
1994-95	N.A.	N.A.	N.A.	N.A.	N.A.

Figures in brackets indicate percentage to total.
N.A · Not Available.

Table 6 shows that among the special categories of students, PH students constitute a major portion, around 40% followed by Ex-service men (around 24%) and Prisoners (22%). It is to be noted that it is only the Open University system which provides educational facility to the prisoners.

Medium-wise Study of Students

The university offers its programmes through Telugu and English media. The data pertaining to the students who opted for Telugu and English media is presented in Table 7. The University has decided to offer undergraduate programmes in Urdu medium also from the academic year 1995-96.

Table 7 : Medium-wise Study

Academic Year	*Telugu*	*English*	*Total*
1988-89	13135 (77.96)	3714 (22.04)	16849 (100)
1989-90	12843 (78.21)	3579 (21.79)	16422 (100)
1990-91	21646 (78.72)	5857 (21.28)	27496 (100)
1991-92	26519 (81.73)	5928 (20.27)	32447 (100)
1992-93	29496 (83.06)	6017 (16.94)	35513 (100)
1993-94	24025 (82.12)	5230 (17.88)	29255 (100)
1994-95	26751 (84.22)	5014 (15.78)	31765 (100)

Figures in brackets indicate percentage to total.

It can be seen from the Table that more than three-fourths of the students study through Telugu medium. The share of Telugu medium students in the total students ranges between 77.96% and 84.22%. The percentage of Telugu medium students has gradually increased and of English medium students has decreased during the period under study. This may be because that Telugu is the mother tongue of most of the people in the state and availability of certain courses like Geology, Sociology, etc. through Telugu medium is rare in formal universities. To facilitate the enrolment of students from neighbouring States and on requests of such students the University has introduced an Additional English paper in the Eligibility Test in addition to Telugu, Hindi & Urdu. This might have resulted in the enrolment or English medium students in urban areas and border districts of Andhra Pradesh. The recent launching of the postgraduate Programmes of the university in Telugu medium is appreciable. It is suggested that the university may also introduce existing programmes like BLISc, BPR to Telugu medium students.

Marital Status

The data relating to the students, sex-wise and marital status-wise, is presented in Table 8.

The sex-wise distribution of students reveals that the male students constitute around 70% and that of female students 30% of the total students. Women enrolment in the university is less when compared to their population in the state i.e. around 50%. This may be because of the low literacy rate among women in a male dominated society.

Marital status of the students reveals an interesting aspect that around 30% of the students are married and the percentage of married students is more among the women. However, it is to be noted that the percentage of married students has come down from 41.86% in 1988-89 to 25.05% in 1993-94.

Thus, it can be concluded that unlike the formal university students, majority students of open university are married and it has attracted a sizeable number of married women. This may be attributed to the flexible entry system of open university in terms of non-compulsory of attendance in counselling classes, choice of subjects, study centres, writing of examinations, etc. With regard to the women's enrolment in the university, it is suggested that *some awareness courses like certificate/diploma* courses in women's studies, women's rights, child care, nursing, etc may be started exclusively for women students.

It is reasonable to conclude from the above analysis that the Open University system of education is neither complementary or supplementary to the conventional educational education system. The Open University system has made a niche for itself and has established itself as an independent system of its own. There is no exaggeration in the statement that the Open University system is a second string to the bow of higher education.

Table 8 : Marital Status

	M E N			*W O M E N*			
Academic Year	*Married*	*Un-married*	*Total*	*Married*	*Un-married*	*Total*	*Grand Total*
1988-89	4016 (23.84)	7484 (44.43)	11500 (68.27)	3037 (18.02)	2312 (13.71)	5349 (31.73)	16849 (100)
1989-90	3388 (20.63)	7986 (48.63)	11374 (69.26)	2716 (16.54)	2332 (14.20)	5048 (30.74)	16422 (100)
1990-91	3223 (11.72)	16755 (60.94)	19978 (72.66)	2325 (8.45)	5193 (18.89)	7518 (27.34)	27496 (100)
1991-92	5575 (17.18)	18164 (55.98)	23739 (73.16)	4522 (13.94)	4186 (11.10)	8708 (26.84)	32477 (100)
1992-93	4546 (12.80)	21786 (61.35)	26332 (74.15)	4322 (12.17)	4859 (13.68)	9181 (25.85)	35513 (100)
1993-94	3827 (12.06)	17331 (60.26)	21158 (72.32)	3797 (12.99)	4300 (14.69)	8097 (27.68)	29255 (100)
1994-95	N.A.	N.A.	22970 (72.31)	N.A.	N.A.	8795 (27.69)	31765 (100)

Figures in brackets indicate percentage to total.
N.A. : Not Available.

The Nature of Science & Technology

Prof. D. Balasubramanian, Director, Centre for Cellular and Molecular Biology, Hyderabad, delivered the convocation address at the thirtieth annual convocation of the Madurai Kamaraj University. He said "Technology is generated constantly and continually from the principles of science and from the practice of science. The embarrassing thing about science is its course is not always easily foreseen or well-charted. Its benefits are often not realised readily enough or even predicted ahead of time. You need to incubate science before you get technology out of it. Sometimes it comes soon, sometimes it does not come at all for quite a while, and sometimes it takes the most unusual serendipitous route". Excerpts

The purpose of an institution such as a school, a college or a university is the continuous production and improvement of knowledge. The system, in its very nature, provides for turnover on a periodic basis and thus rejuvenation. Every so often you train and bring forth individuals who are considered fit not just to face the world, but hopefully to change the world.

What is a degree, a diploma a certificate or a licence? It is the culmination of period during which you have had the experience in the art of learning, of equipping, of discerning and of conducting yourself in the affairs you shall engage yourself. It is an act of civilising. It is here that I need to strike a sombre note, a note of personal sorrow, of grief that I share with some whom I have known, whose children were going through this act of educating themselves and alas, lost their lives. I refer to the barbaric custom of ragging. In the very recent weeks two of my friends lost their children in college. They were lost not because of warfare, not because of cyclones or earthquakes, not because of greed nor robbery, but because of the barbarity that one student practises on another. This is no act of civilisation. This is an act of depravity, brutalism and bestiality. It is the very anti-thesis of what education stands for. Rather than celebrate life we have come to grief and this shall not be. This is a moment thus, a fit moment, when each one of us here is going through the formal ritual or rite, a ceremony of declaration of a stage or a passage in our education, what we ponder and resolve that we shall not tolerate ragging. We shall not be by-standers who read about the tragedies of ragging, we shall not wring our hands in despair and sorrow and do nothing. We shall not say that the system is helpless to deal with these criminals ahead of time but shall take measures to wipe this custom out. I am told that ragging started as a harmless innocuous good-natured banter amongst youngsters who were growing up. Well it is no longer so. Just as supporting your team and rooting for your players in a football match has degenerated in parts of Europe to organised violence by hoodlums, ragging in India is no better than a bestial act of hoodlums who should be behind the bars and not before the blackboard. It is my fervent hope that all students, all colleges and all concerned will devise ways and means to eradicate this custom for ever and ever from our midst.

The act of living should be knowledgeable one, a fulfilling one and one where we experience and appreciate all that the world offers us. Humankind is by and large a social entity. We live in societies. Social transactions need multiple inputs. Individual priorities and preferences, in fact, a part of individual freedom, are voluntarily reduced in order to increase social benefits. This is why laws are made and obeyed and this is how a community, a state, a nation and the world progresses. As the number increases the system becomes more complex and we need newer ways of reaching socially beneficial goals. The time honoured, time-tested and proven mode is the use of technology. I stand before you to reiterate the glories, the necessity and the inevitability of technology and science in the building and blossoming of a successful society.

Technology is neither recent nor necessarily an invention of mankind. There are instances in animal life where the use rudimentary technology — be it a tool, be it an aid, an artifact or a chance discovery that lead to advance. Look at ants. A striking point about them was made by the famous medical scientist and writer Lewis Thomas. An individual ant is no more than a collection of biological cells put together, inside a body that walks around. But put several ants together, then something happens. They sense one another — touching, seeing, smelling and suddenly an organisation is born. An idea is hatched and an enterprise is launched successfully — be it of carrying food across, building a house or an anthill all for the entire community. What an individual ant could not do is done by a collection of them. The idea is transformed into fruition. Newer ways are found that are not possible individually. Laws are made and obeyed. A social structure develops and the technology of building the anthill or carrying the massive food item is fabricated. The society of ants acts as a single organism.

With evolution, as organisms and organs develop, so does the ability for craft and art and technology and science. From the collective brain of the ant colony and its collective muscles evolved the possibility of individual enterprise. As Jane Goodall, who studied the apes of Africa for decades, observed, an individual monkey, gorilla or a chimpanzee is able to think. It uses its brain to devise or create a tool of technology — a small stick or a twig that it plucks off a tree, clears all the leaf stubs so as to make it a smooth and wet stick, which it inserts into a termite hill. The termites that are stuck on the inserted twig are eaten up by the gorilla much as we eat the meat off a kabab skewer. A passive object — the twig — becomes an active instrument in the hands of the ape. It is the product of a brain, a pre-human brain, and an item of technology, pre-human technology.

As more brains get together, a collective enterprise is born, knowledge and experience are shared. And new technologies become possible, building on existing ones. With man, the ability to innovate, the ability to use present knowledge to generate future ones is risen to its highest. Art and craft, technology and science reach their full bloom in man. Information and knowledge get transferred not by genetic means alone but by non-genetic means, namely, through words, language and communication. A university is an outstanding example of such a non-genetic mode of information transfer.

Technology preceded science just as craft preceded art in human history. Technology and science have run different paths until recently. We mark the growth of mankind through various eras and ages — the time he discovered fire, the stone age, the iron age, the bronze age — all the way to the present information age. It has always been a collective enterprise by groups and communities. Early man learnt how to traverse distances — on land through animal power or across waters through boats. It was practised much as a craft and with time it steadily improved. As communities grew and divided into nations, one group asserted over the other largely based on technology. Mere belief was not enough. You have to impose it through power and technology. Technology meant wealth and hopefully welfare. We still think of the Golden Ages of India based on their crafts and their technologies. We marvel at the roads, bridges, waterways, buildings and grain storage posts and silos of the Indus valley civilization. We look back with pride on the metallurgy of the pre-Gupta and Gupta India, the seafaring prowesses of Tamil kings, the dams and anicuts that the Cholas built centuries ago. In this is a lesson, namely, that technology is an instrument of wealth and for the common good.

Science, as we know it today, started in two ways — as an explanation of technology, and driven by curiosity. It is only during the last three centuries, and particularly in the last one century, that we have come to understand craft and technology on the basis of the science that underpins them. Gone is the distinction between technology and science and comes the realisation that technology is simply the application of science and its principles. Science is the grammar of the language of technology. Today, more than ever we feel the need of technology in every aspect of our human existence. We have come to realise that many of India's material problems, our health, our wealth, our welfare must flow from extensive and judicious use of technology. Diseases have been wiped out, thanks to our understanding of the science behind them and the technology that we use in the wiping out. When it starts technology appears expensive but when practised on a large scale it becomes cost-effective. Gratifyingly, technology jumps across borders. It knows no national boundaries. Again,the user of technology need not know the basic science behind it. All he needs to know is how to use it efficiently. This is what I said about technology having been invented and practised quite separately from the underlying science. When you use a radio, a television set or a telephone, you are not required to know the basic physics behind it. It is this ease that technology offers in its operation that makes it applicable on a large scale, over a large nation, regardless of whether all its citizens are literate or not.

We shall shortly be completing fifty years as a free country. The founding fathers of independent India chose technology in its wide sweep to address the issues confronting India and to solve many of our problems. We have succeeded in great measure in this dream. Technology has fed us. From a hungry nation then, we are a food surplus nation now. Technology has made us neighbours. Kashmir has come closer to Kanyakumari, as Gujarat to Guwahati. Technology has made us live longer. People do not die any more of smallpox, cholera, polio or the plague — at least need not die any more. We have built a capacity, a technical capability, a people knowledgeable about technology and people with the ability to use it. All this in fifty years — hardly two generations. This is a no mean achievement. This underscores the point that Pandit Nehru made that "these institutions are the temples of tomorrow". Let us therefore raise our hat to technology. It has been the main instrument in building the India of today.

Yet the job is not done. Just as we were taking off from a poor nation to one with reasonable level of economic development, we are cutting on our expenditure on science and technology research and development. I believe one major cause for this is in the nature of science and technology itself. While they ran separate streams earlier, today technology is generated constantly and continually from the principles of the science and from the practice of science. The embarrassing thing about science is its course is not always easily foreseen or well charted. Its benefits are often not realised readily enough or even predicted ahead of time. You need to incubate science before you get technology out of it. Sometimes it come soon, sometimes it does not come at all for quite a while, and sometimes it takes the most unusual serendipitous route. Who would have imagined when Roentgen discovered X-ray that it would be used as a ready and convenient tool in medicine? Who would have imagined that these same X-rays will now give us a glimpse of the very material that makes up our genetic endowment? It is important to do science and to nurture science in order that technology develops. A ready connection between science and technology, and the resultant good is not always easy to predict, particularly by the non-expert and that is a source of the problem. The legislator wants quick results. Science does not always provide him with one. So, when the belts have to be tightened, the first to be affected is the expenditure on science research and development. In a university, the first cut in the budget is seen in the library, the source of knowledge! This looking for short-term gains is tantamount to short-sightedness. An India that spent more than two per cent of its gross national product on research and development not too long ago now spends less that 0.8%. Singapore, on the contrary, has just doubled its expenditure on this front while Japan has not only done the same but has committed higher expenditure on science and technology, research and development for the next fifty years. Singapore rebuilt itself within a generation, using technology. War-ravished Japan has achieved miracles, thanks to its adoption of the scientific method and technological advances in its reconstruction efforts.

We face many a problem in India today. The solutions are readily available. We do not need to invent new ones. We need to implement existing, proven technologies and methods. The biggest killer of Indian lives is communicable diseases today. Many of them can be averted and the death rate drastically reduced by doing nothing other than implementing low technology public health measures. The plague that hit Surat after a fifty-year lapse did not have to. All that was needed was effective public health measures — clean the garbage, flush the sewers and sprinkle disinfectants. Yet this money was not provided by the Municipal Corporation until disaster struck.

Many of these are soluble problems. The quality of life will take a turn for the better by the assiduous implementation of very simple technologies. It requires commitment by the rulers, and persuasion or even demand by the citizens. In order to do so we need to be literate — science literate, technology literate and environment literate. As we enter the 21st Century this is not too much to ask. We, free Indians, have done it before. We have only slackened a bit now but can still charge ourselves with renewed vigour and face the 21st Century as winners.

The world of humanities, of letters and of natures provides us the perspective. That is why we need to study language and literature — Kural, Keats and Kipling. Unwise is the man who questions why study Tamil or English. The world of science and technology provides us the knowledge and the tools. It is the key to tomorrow. Unwise is the man who questions why study topology or the termites. Wisdom tells you how to mix the two judiciously. We are an ancient people possessed of wisdom. We can thus do so and build a better India of tomorrow.

IGNOU Sanchar Kendra Inaugurated

The Prime Minister, Mr. H.D. Deve Gowda, called for strengthening of the Panchayati Raj system through various educational programmes and the training of their functionaries. "The fruits of knowledge and its applications must be available to the local communities to enable them to solve their problems and develop in them the spirit of enterprise", the Prime Minister said. He was inaugurating the Sanchar Kendra of the Indira Gandhi National Open University (IGNOU) in New Delhi recently.

He said the open education system must utilise all technological tools, at its disposal, to reach the poorest of the poor. "Education plays an important role in promoting self-reliance and its achievement is possible only if we decentralise our governance structure and devolve more powers and responsibilities to the local communities", he said. The Prime Minister said the IGNOU will have to focus its attention on the needs of the people living in the rural, hilly, remote and backward areas. "Unless the IGNOU penetrates these areas and takes the benefit of knowledge, information and skills to the door-step of the people in these regions, its promise made to the nation will remain an unfulfilled dream".

"Education, health and nutrition enhance productivity and contribute to growth. These gains in efficiency lead to higher wages and incomes which in turn result in still better education, health and nutrition".

The Prime Minister said investments in primary education, primary health care, sanitation, drinking water supply rank high on the list of the Government. But, he said, there was a need to correct their direction and to focus on improved and better technical and vocational education, development of skills and competence, and better professional preparation.

Mr. Gowda said efforts must be made to ensure larger infrastructure growth in the rural and backward areas. Even the infrastructure available in the cities was not able to cope with migratory patterns. The Prime Minister said the universalisation of the elementary education system would play a major role in improving the skills of the farming community.

"There is a great deal we can do to modernise our agricultural operations, especially those involving small and marginal farmers. What we need to do is to empower them to develop the quality of their enterprise and draw them out into the modern world driven by knowledge and its applications", he said.

"This will enable small farmers to market their produce and earn "worthwhile" returns from their land and labour", he said. "Unless we address the issue regarding poverty, ignorance, inadequate health care and environmental degradations, and focus our efforts on removing these areas of darkness from our national life, we shall not be able to accomplish the goal of establishing a just and egalitarian society that we have committed to our people", he said.

Mr. S.R. Bommai, Human Resource Development Minister, said the country's higher education facilities catered to only about six per cent of the relevant age group. Even at the current rate of growth, it was expected that the student population would go up from six million to eight million within the next five years, he said.

Besides people in the teens, there were millions of those who did not have the opportunity to pursue higher education in the past and were forced to join the work force. "The open university system will go a long way in catering to the needs of such people", he said.

Calling for taking "a serious look at what we teach in our universities and colleges", Mr. Bommai said, "Modernisation of the curricula, strengthening of the technical and vocational content, establishment of meaningful linkages with employers and user agencies of human resource, integration of education and training are some of the essential reforms which can wait no longer".

Mr. Bommai also called for opening more open universities in the country to serve all regions and greater number of people through all major regional languages.

He said IGNOU should strive to reach out to the large constituency of non-traditional student groups including adult learners, working people and those looking for new opportunities.

He said during the Ninth Five Year Plan, beginning April, the existing higher education infrastructure would have to be expanded by at least 33 per cent. In real terms, it would mean the number of universities would go up from 250 to 300, colleges from 8,000 to 10,000 and teachers from three lakhs to four lakhs.

The Japanese Ambassador to India, Mr. Sakutaro Tanino, said development of human resources by providing facilities for continuing education on a scale envisaged by the IGNOU was an immense task.

He said by the utilisation of facilities of the Sanchar Kendra the university would be able to produce higher quality of educational programmes. Japan, under its Overseas Development Agency, has provided a grant of about Rs. 68 crores for setting up the Sanchar Kendra or the electronic media production centre.

The Prime Minister thanked the Japanese Government for the assistance and said, "the setting up of the Sanchar Kendra is a shining example of cooperation between the two countries".

"I am sure joint endeavours of this kind will continue to bind the people of the two countries in the years to come", he said.

The Prime Minister also received online felicitations on setting up of the kendra from Shimla and Poona.

The Vice-Chancellor of IGNOU, Prof. Ram Takwale, while describing the university's performance, said "during the first decade of existence, IGNOU expanded enormously in its enrolment, range of courses, coverage of learner groups and outreach".

Centre on Automotive Research & Training

The Anna University Senate is reported to have approved the starting of an advanced centre on automotive research and training. Drawing on its strengths in various disciplines of engineering, the Centre for Automotive Research and Training (CART) will support automobile makers and ancillary units near Chennai, besides building up basic research.

Anna University Vice Chancellor, Prof. R.M. Vasagam, said that CART would focus on aspects like engine research, emission control, noise reduction, ergonomics, vehicle safety, fuels and lubricants development, and human resource development support to industry.

"It is clear that CART is not going to be a single unit or building, but will be a focus point for the existing strengths of the University in different fields of engineering for research and support into all aspects of an automobile. Our priority is to get the Centre going by starting some programmes in training and research", he said.

Dr. R. Ramaprabhu, Professor of Mechanical Engineering, Anna University, said the starting of CART coincides with the golden jubilee of the Department of Automobile Engineering of the Madras Institute of Technology (MIT). Also, the Mechanical Engineering Department of Anna University is completing 100 years. The Centre would rely mostly on the mechanical and automobile engineering departments.

Though the Centre was in its final shape, it would require a heavy financial outlay, Prof. Vasagam said. But before getting support from an agency or a consortium, "We need to earn the respect of the industry by working for it. If the students get involved and prove the University's capability, automobile manufacturers and ancillary units would come out with support".

The Centre would draw upon the available expertise in fields like rubber and polymer technology, ceramics, CAD/CAM facilities, instrumentation and electronics.

The focus would be on supporting industrial training on the new machines. Already the Anna University-FRG Institute for CAD/CAM was offering a short-term foundation course in automobile engineering to enable any graduate engineer to acquire skills in the discipline and provide manpower to the auto industry. Later, the trainees would be eligible to enrol in more advanced modular courses in auto engineering.

"Our faculty will also visit the industry and perhaps design tailor-made curriculum for the intending trainees", the Vice-Chancellor said.

For the testing and consultancy services planned by the Centre, the available infrastructure and labs would be used. "In short, we have the expertise to look at every component of an automobile and develop on it wherever needed, like aspects of design and material testing to suit local needs".

Dr. Ramaprabhu pointed out that the University had already done some pioneering work in engines and ethanol fuelled automobiles earlier. There was renewed interest in these areas and the University had been getting some sponsored programmes from sugar industries and the Government of Tamil Nadu to use ethanol blended with petrol. Basic research was on to find out the effect of the blending in cold starting process and on engine components and aluminium castings".

The University Senate also accorded its approval for the setting up of a Centre for Disaster Management and Mitigation.

South Indian History Congress

"Giving a functional orientation to the discipline of history and making it applied in nature would go a long way in making it a popular and sought-after subject", observed Prof. A. Sreedhara Menon. He was delivering the presidential address at the inauguration of the 17th session of the South Indian History Congress hosted by the Department of History and Archaeology, Andhra University in Visakhapatnam recently. He underscored the need to teach history as a job-oriented course, shorn of its over-academic theoretical overtones. "One of the major avenues available for employment that has opened up in recent times for students of history is the fast growing tourism industry in south India because of the disturbing conditions prevailing in some parts of north India and in neighbouring Sri Lanka", he felt.

Describing himself as a historian belonging to the traditional school which believed in objective presentation of historical facts in a language which was simple and impressive, he expressed concern over the disturbing trend in recent times in the teaching and writing of history.

He said a conscious attempt was being made by a dominant minority of historians belonging to some partisan school of thought or other, to impose their views on students and teachers. "History is sought to be presented or rewritten by distortions, suppressions and suggestions with a view to promoting the sectarian interests of a particular lobby or group". Unless those interested in the objective presentation of facts in the true spirit of history were vigilant, history as a subject, be it Indian History or South Indian History, would have a bleak future, he opined.

Criticising the method of uniform syllabus and lessons drafted by historians in Delhi, he said Indian History prescribed for study in south India should contain a good mixture of regional and local history if it was to be meaningful and purposeful. He wondered if there was any real need for the kind of regimentation through common syllabus and textbooks in the name of national integration. He said an ideal syllabus in Indian history should be balanced and integrated with political, social, economic and cultural approaches. The postgraduate syllabus should give greater weightage to social, economic and cultural history with focus on many theories but in the case of the undergraduate and secondary level syllabus, political history should get the pride of place.

He also dwelt at length on the importance of regional and local history and did not agree that the focus on regional or local history would lead to parochialism saying that such fears were unfounded. Stating that South Indian history like any other history was multi-dimensional in scope and inter-disciplinary in approach, he explained the role of south India in the spread of Indian culture abroad and the economic aspects and cultural legacy of south India.

He hoped that the South Indian History Congress would provide guidance to those engaged in the task of reconstruction of South Indian History which suffered neglect in the beginning.

Prof. Vaikuntham, Vice-Chancellor of Kakatiya University and general secretary of the South Indian History Congress, said a critical, analytical and objective study of South Indian History was necessary. "Making history scientific and objective is the need of the hour", he said and added that the History Congress provided an opportunity for young scholars to interact with senior historians. Stating that each region had contributed immensely to the development of society, he said the contribution of South India in the field of culture and national movement was significant. He, however, said more research and studies would have to be conducted in socio and economic history.

Dr. M. Gopalakrishna Reddy, Andhra University Vice-Chancellor, who inaugurated the Congress, said that though many considered history a dull subject, they would at some stage realise it was a record of experimentation of life on a micro scale. "Progress lies in avoiding pitfalls experienced in the past and derive lessons from them". He noted that while Indian culture was comprehensive, it allowed regional variations and history would be the basis for cooperation among different religious, cultural groups for integrated progress. He said the contribution of South India to Indian culture, architecture and languages was immense and added that the research done in South Indian history should reach the students.

Over 200 delegates from various parts of the country participated in the Congress.

Central Organ Registry

The Tamil Nadu Dr. MGR Medical University proposes to establish a 'Central Organ Registry' (COR) linking all health care institutions in the country at an outlay of Rs. 25 lakhs. This was stated by Dr. D. Raja, Vice-Chancellor, while addressing the annual conference of the Indian Society of Organ Transplantation (ISOT) in Chennai recently. He said the registry was a long 'felt need' of transplant teams and the medical community. In the first phase the programme would network centres within the city and then link up major institutions in the State. The net would later encompass national institutions. In the last phase, the COR would aim to hook its data base to international centres involved in organ transplantation. The development of software for the project had been given to National Informatics Centre and would be made available through NICNET.

The networking would also work towards improving the standard of clinical and acute care centres of both the Government and the private institutions. The medical profession would also be furnished information on the basis of post-mortem and related issues, consumer protection laws apart from discussion on the ethical issues relating to brain death and provision of life support to the dying till the end.

Dr. H.L. Trivedi, president, ISOT, said the society had succeeded in getting the nephrologist and urologist on the same platform. The Institute of Kidney Diseases and Research Centre at Ahmedabad would soon be expanded to acquire additional facilities to conduct liver and heart transplantations at a cost of Rs. 100 crores.

Mr. N. Veerasamy, Health Minister, said proper coordination was needed between private and government hospitals to effectively carry out organ transplants. He called upon the medical profession to begin transplantations on a larger scale as the Centre and the States had enacted laws to regulate them.

The Minister handed over 'lifetime achievement' awards to seven doctors involved in the field of organ transplantation.

Dr. M.S. Amaresan, Chairman, ISOT, said organ transplants could not be increased unless government institutions involved in teaching were provided with adequate infrastructure.

Tech-21 Exhibition

Projections and trends for the decade ahead, on information technology, social and economic consequences of environmental conflicts, challenges and options on the energy front were some of the topics that came up at the four-day exhibition-cum-symposium on "advanced technology for the 21st century" inaugurated recently at IIT Madras.

Dr. R. Natarajan, Director, IIT, said the main drivers on the technology front for the next century were information, environment, materials, construction, communication, energy and manufacturing. Modern technology had made in-roads into every sphere of activity and there was hardly any area left untouched by technological advancements. The decade ahead would see rapid strides in technological advancements compared to earlier years.

Prof. V.G. Idichandy, convenor Tech-21, said recent advancements in information technology had provided an opportunity to think and plan for the future. The exhibition would facilitate strengthening of industry-institution ties as well as work towards upgrading technology for the benefit of the industry.

Prof. K.V.S. Rama Rao, Dean, Industrial Consultancy and Sponsored Research, IIT, said an open house session had been organised to highlight the facilities and the research work carried on at the institute.

Mr. P.T. Prabhakar, Rotary Governor, District 3230, who inaugurated the exhibition, said the exhibition was part of the vocation service project of the Rotary Club of Madras South with the assistance of IIT.

Hindi Prachar Sabha Convocation

Mr. Devendra Kumar, former Vice-Chancellor, Gandhigram Rural Institute, Gandhigram, delivered the 61st annual convocation address at the Dakshin Bharat Hindi Prachar Sabha in Chennai recently. He said that the Sabha was a means to bring not only the states in South India together, but the whole of the country closer. It was also the language of the majority in the country and had proved capable of cutting across social and economic barriers as it remained the language of both the rich and the poor alike. For the Father of the Nation, Hindi was a means to convey his ideals of Ahimsa and a vehicle to develop fellow feeling among people.

Mr. G.S. Dhara Singh, Vice-President of the Sabha, read out the speech of Dr. B. D. Jatti, former Vice-President, on the occasion. Making a strong case to impart technical education in Hindi, he said that the language had to be modernised to include technical terms so that more people could take up technical education and derive benefits. Mahatma Gandhi visualised that the country could be united through a common language, Hindi, and floated the idea of setting up the Sabha to propagate Hindi in non-Hindi areas.

Mr. R.F. Niralkatti, Secretary of the Sabha, said that the Sabha conducted the Hindi examinations twice a year. Started with just five students during the height of the freedom movement, the institution now imparts Hindi education to more than five lakh students in the four southern states.

At the convocation, over 1,650 students were awarded the rastra basha visharadh degree, 3,900 the praveen degree, 800 the pracharak (teacher training) certificate and 135 received translation diplomas. The B.Ed. degree was awarded to 3,700 students; M.A. to 28; M.Phil. to 29 and Ph.D. to one scholar.

National Youth Day

The Andhra Pradesh Government intended to accord priority to technical education and the rapidly developing information technology, said the Chief Minister, Mr. N. Chandrababu Naidu. He was participating in the National Youth Day celebrations organised recently by the Commissionerate of Youth Services in coordination with Vivekananda Yuva Kendra of Hyderabad and Prajna Bharati. The Chief Minister opposed proliferation of colleges offering Arts courses, "which is a legacy of the British regime as they wanted our youth to end up as clerks".

Mr. Naidu said education would be reoriented to ensure that students passing out of tenth and 10 plus two classes would be able to eke out a livelihood on their own. The youth policy of the Government was aimed at self-employment, he said and called for proper use of the Rs. 170 crores made available under the Chief Minister's Empowerment of Youth (CMEY) programme for the remaining three months of the current financial year. In no other State, the Government was offering Rs. 1 lakh of financial assistance to youth groups to set up self-employment units, he said.

Young Scientists Awards

Eighteen researchers working in various Indian universities and institutes were honoured with the "young scientist award" by the Indian Science Congress Association at its 84th valedictory session held in New Delhi recently. The Vice-Chancellor of the Delhi University, Professor V.R. Mehta, presented the awards carrying a cheque of Rs. 2,500 and a citation.

The awardees were M.I. Kaul (Ludhiana), Mrs. Jasjeet Kaur (Delhi), Mr. Sanjoy Roy Chowdhury (Calcutta), Mr. Aniruddha Ray Chaudhuri (Calcutta), Dr. Daisy Raina (Gwalior), Mr. G.D. Gem Mathew (Kottayam), Mr. Manish Sarkar (Chennai), Mr. B. Sreenivas (Hyderabad), Mr. Sunil Kumar (Pilani), Mr. Amitava Patra (Calcutta), Mr. Debajani Chakraborty (Kharagpur), Mr. Vinay Parikh (Patiala), Ms. Uma Arora (Hisar), Mr. N. Majumdar (Calcutta), Mr. Narendra K. Dhingra (Bangalore), Mr. Soumi Mitra (Delhi), Mr. Mandar Kale (Pune) and Mr. D.R.K. Mohan (Gwalior).

Fourteen other young scientists were presented with the certificate of appreciation by Prof. Mehta.

Speaking on the occasion the Vice-Chancellor urged the Government to make a new science policy giving emphasis on research and development in universities. In the present day scenario all universities needed efficient manpower, financial and managerial skills to promote science, he said.

Prof. Mehta said India had competent scientists who were capable of outstanding work as witnessed by the "Green Revolution", the Agni and Prithvi missiles and the advances in space but the lack of investment was a sure indicator that science was in decline.

He said in a situation where a career in management offered five times more than what a young scientist could hope to earn, it was not difficult to see the drift. But there was more to it than salaries and young scientists were not being given the right facilities in terms of properly equipped laboratories and materials to experiment with.

"It is high time we restored research to the universities", the Vice-Chancellor said, adding it was the intermingling of theory and practice under the university system which could ensure progress.

The Vice-Chancellor said drastic steps were needed to ensure that science developed to the advantage of the nation and this, he said, should start with a new policy on science.

Rohilkhand Varsity Plans Computer Software Project

The Rohilkhand University proposes to start a Rs. 25 crore project with technical assistance from a German agency to prepare computer software and set up a machine repair shop exclusively for farmers. This was revealed by the Vice-Chancellor, Prof. M.D. Tewari.

He said that computer engineering department of the Institute of Engineering Technology (IET) would prepare programmes and graphics in Hindi to train farmers in soil-testing, fertilizer management and testing of seeds, etc.

The mechanical engineering department of the institute had already started work on a rural machine shop to repair tractors, harvestors, threshers, bicycles and radios belonging to villagers, he said.

The university had also decided to adopt 32 villages in its catchment area, Prof. Tewari added.

Autonomous Medical College

Gandhi Medical College, Bhopal has been declared as the first autonomous medical college in Madhya Pradesh. This was announced by the State Medical Education Minister, Mr. Narendra Nahata at a meeting of the deans of medical colleges in the state.

News from Agricultural Universities

Village Linkage Programme

The Himachal Pradesh Krishi Vishwavidyalaya, Palampur is reported to have launched a unique pilot project on technology assessment and refinement through the institution-village linkage programme. Sponsored by the Indian Council of Agricultural Research, the project will be based on a strong linkage between agriculture scientists of the university and farm families.

Under this project, the farming community would be involved in planning, implementation and evaluation of various programmes introduced for them. This would include identification of their problems and finding technological solutions.

The farm scientists of the university, who visited rural areas and interacted with the farmers, were encouraged to find the farmers took a keen interest in expressing their problems and views on various aspects of farming. They inquired about the methods for boosting production of vegetables and oilseeds.

The university proposes to set up micro-situational, varietal demonstration plots for cultivation of different crops at 30 stations in the state to verify suitability under each micro-farming situation. It would also organise veterinary clinical-cum-training camps at different places to treat animals and impart training to farmers in rearing and feeding cattle to get the maximum yield of milk. Separate training camps would also be organised for rural women to impart training in the post-harvest technology and preservation of seasonal and off-seasonal vegetables.

New Crop Varieties

The Sher-e-Kashmir University of Agricultural Sciences and Technology has developed SKAU-105 variety of rice which has a yield potential of 65 to 68 quintals per hectare against 55 to 60 quintals per hectare in case of China-1039.

According to the Vice-Chancellor, Mr. M.A. Dar, the new variety has good head rice recovery and is moderately resistant to blast. It has medium bold grains. The variety would be released for cultivation by farmers during the next season.

Among the new varieties released by the university, after the Government of India gave its approval, include "Jhelum" and "Chenab". Both these varieties, released last year, have a yield of 60 to 65 quintals per hectare. While "Jhelum" has been recommended for cultivation in the lower belts of the Kashmir valley, "Chenab" has been sown in the temperate zones of Doda and

Poonch and in the lower belts of Kashmir. Both have moderate resistance to blast.

Scientists plan to release a new variety of almond HS-2 (Makhdoom) which gives six to seven quintals in shell yield against 2.5 to 4.5 quintals in case of seedling types. Makhdoom variety is a mid-bloomer and escapes cold stress to a large extent during flowering. It is a high yielding variety with a shelling percentage of about 40. Another variety "Waris" has been recommended for release. This variety has a shell yield of 6 to 6.5 quintals. It has large sized nuts with a shelling percentage of 43.

In case of apples, scientists have tested with success "Shireen" which is sweet. The fruit is small to medium sized and is resistant to mildew and scab. Its yield is better than "Delicious".

A new variety of red apple, "Firdous" is resistant to powdery mildew and scab and other pests. It can be cultivated in temperate zones in the state and can be harvested between mid-July to August. This is bound to provide a better market cover for the producers.

Mr. Dar said Ranbir basmati variety matured 20 to 25 days earlier to Basmati-370. Its cultivation had been recommended for non-traditional rice areas. It was a super fine variety.

News from UGC

Countrywide Classroom Programme

Between 1st and 7th February, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

1.2.97

"Understanding Solar Activity - II"

"Effects of Globalisation"

"Bonsai : The Green Dwarfs-II"

2.2.97

"Theatre Architecture - IV: Medieval Sanskrit Theatre"

"Face to Face with Raj Bisaria"

"Wooden Imprints : Block Printing"

4.2.97

"Cloud Physics-I"

"Stories in Stone"

"Domestic Dogs-I"

6.2.97

"Career Counselling : Masters in Business Management"

"Was all the Training in Vain? Mascular Strength"

"The Consumer Protection Act : Treating Patients as Consumers"

IInd Transmission

1.00 p.m. to 2.00 p.m.

1.2.97

"Understanding Cinema-II : Camera Distance"

"Family Series : Working to Create Contentment-II"

2.2.97

No Telecast

3.2.97

"Efficient Lighting"

"Classical Mechanics-IX : Symmetries"

4.2.97

"Silver Magic-II"

"Integral Pedagogy Process - I : An Overview"

"Relieving Pain through Tens"

5.2.97

"Mystery within Gulf of Kutch"

"My City, My Paintings"

"Quest for Primitive Vascular Plants-II"

6.2.97

"Dinosaurs in Gujarat"

"Learning to be"

"Preparation of Asprin"

7.2.97

"Conretising Algebra-I"

"Human Rights and Indian Constitution-I"

"Brassica Compestris"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

3.2.97

"राग संगीत - III : भैरवी"

5.2.97

"संगीत गणित - IV"

7.2.97

"जीवन : एक कविता समय"

We Congratulate ....

Dr. C.H. Rana who has taken over as Vice-Chancellor of Gujarat Agricultural University, Sardar Krushinagar (Dist. Banaskantha).

BOOK REVIEW

Chauvinistic Ideology

Bharat Bhusan Mohanty*

L.N. Renu : Indian Ancestors of Vedic Aryans. Bombay, Bharatiya Vidya Bhawan. Pp. 46. Rs. 60/-.

The attempt to find out sociological content in Vedic texts is no doubt a matter of serious research. Propounding a theory of this kind that Aryans are not a race but a cult and it has been an outcome of a continuous process of reformation is certainly to be welcome, if it takes into account some genuine issues of contradictions, left around it. The phenomenon of 'Aryan Diaspora' possibly to have taken place much earlier to 1500 BC should not be understood in terms of colonial invasion or the several other invasions made by Greeks, Afghans, Mongols, Iranians, because tribes during that period were nomads or wandering tribes. Permanently settled tribes on basis of which many civilisations have come into existence in the latter period were very few and extremely scattered in nature. The movement from one place to another looking for new settlements exclusively depending upon seasonal advantages, was very much a normal phenomenon. In most cases the sudden movements were taking place due to certain natural disasters : flood, famine, drought and earthquake. L.N. Renu's ahistorical observations and eccentric interpretation of Vedic texts and uncritical way of relating Vedic period with the prevedic and stone age period, dubiously carries a strong political overtone. His anachronistic approach over the Vedic texts and his inability to back his thesis by historical evidence creates a great amount of confusion and suspicion over his commitment to the cause.

The five small chapters Renu has developed in his book do not penetrate into the genealogy and its role in explaining the sociopolitical content of a text.

In his first chapter 'Totemic Setting' he tries to project a simplistic view of totems, taboos, rites and rituals and its continuity in later Vedic texts. To claim the presence of these items exclusively an Indian or Aryan phenomenon is outrightly dogmatic. Primitive people not only in India but in other parts of the world had similar kind of relationship with nature, animal kingdom and natural phenomenon. Taboos, totems rites and ceremonies of a particular place are to a great extent constructed on the basis of certain geographical limitations, depending largely upon the amount of its necessity and availability. The basic nature of all these elements is very much structural in nature. In certain cases rituals have taken place in a similar manner in two different societies, distinctly separated from each other geo-politically. The American Indian tribes in USA practise certain rituals in their society which are similar in nature to the rituals practised by the Aryans. Take for example, the cremation ceremony in India which according to Renu, is conducted by following the instructions laid down in the Atharva Veda. The 'Mohaves', one of the ancient American Indian tribes, observe certain rituals after the cremation. Gordon C. Baldwin comments, 'for four days following the cremation, the mourning relatives drank no cold water, ate no salt or meat or fish. Mourners had to cut their hair, females to ear level, males to shoulder length. Along with the mourners, everyone who had touched or taken care of the corpse or who had made a speech had to go through a purification ritual'. (P.108, Indians of the Southwest, Capricon Books, New York, 1970.) There is another point I would like to make regarding the exclusiveness of Indian heritage, formulated by Renu. He says while making list of Indian totems, taboos etc, there is no trace of any Central Asian heritage in them. So far as the Indian astrology and grammatical principles are concerned, the distinct formative influence of Greek astrologers, philologists and Central Asian scholars had a substantial role to play. Many Indian scholars, historians and archeologists have asserted clearly in their works that the Vedic civilisation had dialoguic relationship with Central Asia and had a continu-

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**Lecturer in English,*
Chilarai College, P.O. Golakganj,
Dist. Dhubri, 783 334, Assam.

ous relationship of mutual exchange of cultural, political and epistemological views paving the way for mutual enrichment. This act of vague differentiation between India and Central Asia done by Renu does not construct any material base for his hypothesis to stand on.

Renu's adventure into controversies and historical contradictions in the succeeding three chapters has drawn impossible parallels, structural vagueness, distorted ethological data and pseudo pedantry on philology. By comparing the emergence of Jainism, Buddhism, Christianity and Islam with the emergence of Aryan cult Renu tries to establish that the Aryan cult is a religious, spiritual and philosophical movement and not the cultural politics of race. The claim of Vedic texts as cult specific is subject to an array of controversies. In a similar fashion, the racial multiplicity, its specific historicity and its geo-cultural political distinction are twisted to be merged at a homogenous plane. The denial of racial distinction is to be considered as a manipulation of ethnological history and it shows Renu's ignorance of physiognomical diversity which is a material reality in India.

The process of culturing of Indian dialects finally shaping out as common linguistic medium that is Sanskrit and the hypothesis of migration of Aryans to different parts of the continent in the later period are presented in a very ambiguous manner. Because not a single argument of Renu conforms to any historical evidence. There is nothing objectionable in disputing the theories formulated by the colonisers or the colonised theoreticians. But the way Renu has countered those historically established views exposes his amateur scholarship and his sociopolitical ambition. This kind of document will present a totally misleading history of India to the caste, creed and sect ridden Indian society. The recent uprising of the Brahminical chauvinism and caste, community based politics are tactfully accommodated while interpreting the Vedic texts. The convention of extrapolation, intrapolation and modification by the help of which many Indian religious texts, scriptures and other similar documents were twisted in accordance with the necessity of the upper caste is tactfully continued under a pedagogic cover.

COMMUNICATION

English *Quo Vadis*

I read Padma Jha's article, "English *Quo Vadis*" (*University News*, Nov 11, '96) with interest. It gave in brief an outline of the development of English language from 7th century onwards and tried to show as to how the language has evolved from its humble beginnings to its present overwhelming spread as native language for Great Britain, Ireland, the USA, Canada, Australia, New Zealand and South Africa, second language for India, Pakistan, Africa, Philippines, Malaysia, Singapore and foreign language for Japan, China, Russia, West Germany and Saudi Arabia.

It is not difficult to understand that English is able to spread far and wide only because of English colonialism. However, it must be admitted that the imposition of English in the colonial countries worked also to provide awareness of advanced political thought of the European renaissance and consciousness of human rights, and thus made way for the independence of the colonial countries.

In India we have English as a second language just for pragmatic reasons to serve as inter-state and union-state communications, and as such English must know its limitations.

We cannot get rid of History. English is a deliberately imposed language by an imperial government, and this never should be forgotten. English came to India for pragmatic reasons and is retained in India, again for pragmatic reasons. It can never become a language in which we can think and dream. We think and dream only in our native languages. Original thinking comes only in one's own language.

It is only wishful thinking of a handful of Indians that "the new generation thinks, talks and dreams" in English This is not true and it can never happen.

English cannot take the place of our own languages, or, our national language. If English is regarded a second language in India, it is our weakness. We should try to bring English to its deserving position of a foreign language here. And this can be achieved, let it be said clearly, not by discarding English but by enriching Hindi and other Indian languages so that English may take a back-bench.

Surendra Verma
Professor and Head,
Department of Non-Violence,
Peace & Value Education,
Parshwanath Vidyapeeth,
Varanasi-221 005.

K. K BIRLA FOUNDATION

Proposals/Applications are invited for the Foundation's following awards/schemes

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v) Vachaspati Puraskar (Rs. 75,000/-) for any work written in Sanskrit.
vi) G. D. Birla Award for Scientific Research (Rs. 1.50 Lakh).
vii) K. K. Birla Foundation Awards for Sports (2 awards each carrying Rs. 75,000/-).
viii) K. K. Birla Foundation Fellowships for Journalists.
ix) K. K. Birla Foundation Fellowships in Comparative Indian Literature.

Last dates generally between 15 March and 31 March, 1997. Full details and Proposal/Application Forms etc. may be obtained from the Foundation's office, Hindustan Times House, 10th Floor, 18-20 Kasturba Gandhi Marg, New Delhi-110001.

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True copies of statements of marks of all public examinations passes should be enclosed. Applications duly completed in all respects should be sent to the address given below, **within 15 days** from the date of publication of the advertisement.

Dr. P.S. Kinnerkar,
Gharse Towers,
Opp. Don Bosco,
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Baselios Mount
10.1 96 **PRINCIPAL**

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Category A : To follow a course in Methodology of French as a Foreign Language.

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To follow a course in translation or interpretation in a renowned school specialising in translation/interpretation.

Duration 1 to 3 academic years depending on the course to be prepared

Application forms may be obtained from the University Grants Commission (IC-I) Section, Bahadurshah Zafar Marg, New Delhi-2. The last date for receipt of applications in the U G C office duly completed is 17.2.97.

–davp 823 (14)96

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a) For Scheduled Caste Category :

Physics-1, Botany-1, Commerce-1, Education-1 (Spl.-Candidates with spl. in Environment Education, Mathematics Education, Teaching of Physical and Biology Sciences, Computer Education, Educational Management, Educational Philosophy/Sociology and Education of Disadvantages including Education of Tribal, Scheduled Castes and Women; Non-formal Education will be preferred),

English-1, Law-1, Mathematics-1, Bio-Technology-1 (Spl. in Immunology)., **Physical Education-1, Painting-1**

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Business Management-1, Commerce-1, Education-1(Spl. will be the same as mentioned against the post of Lecturer in Education at a) above), **Economics-1, Computer Science-1, Physics-1, Physical Education-1, Music-1 (Vocal).**

The qualifications for the above mentioned posts will be made available with the application form.

Candidates already in service should send their applications through proper channel. An advance copy, however, may be sent direct.

The eligibility of every candidate will be determined on the basis of qualifications acquired by him upto the last date fixed for the receipt of applications.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates, etc. for verification.

The University reserves the right to fill up or not to fill up the posts or to call only suitable candidates for interview. The number of posts to be filled may vary.

Application form alongwith detailed qualifications and the other conditions can be obtained from the **Deputy Registrar, Recruitment Branch** on payment of Rs. 25/- in cash or by making a written request to him accompanied by self-addressed envelope of 23 x 10 cms. with postage stamps affixed worth Rs. 2/- and a Postal Order of Rs. 25/- drawn in favour of Finance Officer of the University.

Note : 1. Applications received on plain paper, not in conformity with the requirements as specified above, also in the application form and received after the last date will not be entertained.

2. Persons who have applied earlier for the above mentioned posts (except Lecturers in Physical Education and Painting for S.C. category; and Lecturers in Physical Education and Music (Vocal) for S.T. category) against Advt. No. 2/96, dated 24.9.96 need not to apply again. However, they may send additional information, if any.

C.R.B. Lalit
REGISTRAR

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited up to **18.2.97** for the following temporary posts in the Hqrs. Office of the Council, New Delhi.

ADVT. 1/97:- TECHNICAL OFFICER (MANAGEMENT INFORMATION) (RESERVED FOR SC) in the scale of pay of Rs. 2000-60-2300-EB-75-3200).

QUALIFICATION & EXPERIENCE : ESSENTIAL : Master Degree in Science or Information Science plus 5 years experience in information systems including Data preparation for Data Base Management Systems

DESIRABLE : Experience in working with DBMS package on mid-range computer.

JOB DESCRIPTION: Supervising the collection and preparation of data for the various MIS on Extramural Research Project etc. The Officer will be responsible for the verification of data, validation, coding and preparation of data to suit structural changes whenever required

ADVT. 2/97:- MANAGEMENT INFORMATION OPERATOR (RESERVED FOR ST) in the scale of pay Rs. 1200-30-1560-EB-40-2040).

QUALIFICATION & EXPERIENCE : ESSENTIAL: (i) Bachelors degree with Mathematics/Stat/Physics/Economics or Commerce with Stat (ii) One year experience in Online Data Entry, Coding and compilation of Data

DESIRABLE : Diploma in computer science (minimum 6 months duration from a reputed Institute.)

AGE : For Advt. No. 1: 35 years and for Advt. No 2: 25 years as on 18 2.1997. SC/ST candidates are allowed relaxation in accordance with Govt of India Rules in force.

General Conditions : Above posts are temporary but likely to continue, Pensionary benefits are admissible. Application forms for the post of Technical Officer **(Management Information)** & other information are obtainable from the Director General, Indian Council of Medical Research (Admn. I Section) Post Box No 4911, Ansari Nagar, New Delhi. Forms duly completed should be sent to the same address

For the post of **Management Information Operator**, application on plain paper giving full particulars should be sent to the above address, alongwith one attested copy of the latest passport size photograph and attested copy of certificate/testimonials including caste certificate

Candidates called for personal discussion and Test/Interview for both the posts will be paid second class rail fare by the shortest route. No DA is admissible. No. TA/DA is admissible for joining the post or on termination of appointment.

Applications of employees working under the Central/State Govt./Semi Govt and Govt. Controlled Undertakings should be sent through their employers and should be received before the closing date alongwith the certificate of the employer that the applicant will be relieved within three months of his/her receipt of appointment orders. Advance copies will be considered subject to the condition that a 'No Objection Certificate' from the employer is produced at the time of test/interview

Applications received after the closing date will not be considered. The name of the post applied for must be indicated on the application. Incomplete/late applications will not be entertained. The Council reserves the right to short-list the applications to be called for test/interview.

ANY CANVASSING BY OR BEHALF OF THE CANDIDATE(S) OR BRINGING POLITICAL OR OTHER OUTSIDE INFLUENCE WITH REGARD TO THE SELECTION/RECRUITMENT SHALL BE CONSIDERED AS DISQUALIFICATION.

श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर

सी.पी.एम.टी. 1997

अधिसूचना संख्या : एस.एस.एम.का.वि./सी.पी.एम.टी./97/353 **दिनांक : दिसम्बर 25, 1996**

उत्तर प्रदेश के राजकीय मेडिकल कालेजो तथा निजी क्षेत्रो मे स्थापित मेडिकल कालेजो (पी.वी. नरसिम्हा राव मेडिकल कालेज, देहरादून, सन्तोष मेडिकल कालेज, गाजियाबाद), किंग जार्ज मेडिकल कालेज की दन्त चिकित्सा संकाय मे तथा निजी क्षेत्रो मे स्थापित सन्तोष डेन्टल कालेज, गाजियाबाद मे तथा होम्योपैथिक, आयुर्वेदिक तथा यूनानी कालेजो मे शिक्षा सत्र 1997-98 मे विभिन्न पाठ्यक्रमो मे प्रवेश हेतु अभ्यर्थियो के चयन के उद्देश्य से एक सयुक्त प्रवेश परीक्षा (सी.पी.एम.टी.–97) दिनाक : 16, 17 मई, 1997 को आयोजित होगी । विभिन्न पाठ्यक्रमों मे प्रवेश की संख्या निम्नवत् है :

एम.बी.बी.एस.	सात राजकीय मेडिकल कालेज	कुल सीटे	782		
एम.बी.बी.एस.	पी.वी.नरसिम्हा राव मेडिकल कालेज, देहरादून	फ्री सीट -	25	पेमेन्ट सीट	18
एम.बी.बी.एस.	सन्तोष मेडिकल कालेज, गाजियाबाद	फ्री सीट -	25	पेमेन्ट सीट	17
	कुल योग एम.बी.बी.एस.		832	पेमेन्ट सीट	35
बी.डी.एस.	डेन्टल कालेज लखनऊ	कुल सीटे -	51		
बी.डी.एस.	सन्तोष मेडिकल कालेज, गाजियाबाद	फ्री सीट -	20	पेमेन्ट सीट	14
	कुल योग बी.डी.एस.		71	पेमेन्ट सीट	14
बी.ए.एम.एस.	10 राजकीय आयुर्वेदिक कालेजो मे	कुल सीटे -	430		
बी.एच.एम.एस.	10 होम्योपैथिक कालेजो मे	कुल सीटे -	295		
बी.यू.एम.एस.	2 मेडिकल कालेजो मे	कुल सीटे -	80		

राज्य सरकार मे यह अधिकार निहित है कि आवश्यकतानुसार प्रवेश की सख्या मे परिवर्तन कर सके । सी.पी.एम.टी. वर्ष 1997 के निर्धारित उपर्युक्त विभिन्न पाठ्यक्रम मे दर्शायी गयी समस्त सीटो मे (पेमेन्ट सीट सहित) आरक्षित सीटों का निर्धारण उत्तर प्रदेश राज्य सरकार द्वारा समय समय पर निर्गत शासनादेशो के अनुसार किया जायेगा।

भारत के नागरिक जो उत्तर प्रदेश के निवासी है तथा माध्यमिक शिक्षा परिषद, इलाहाबाद, यू. पी. की इण्टरमीडिएट परीक्षा (जीव विज्ञान वर्ग) अथवा इसके समकक्ष मान्यता प्राप्त परीक्षा उत्तीर्ण की है अथवा वर्ष 1997 की उक्त परीक्षाओं मे सम्मिलित है इस सयुक्त परीक्षा मे सम्मिलित हो सकते है । सयुक्त प्रवेश परीक्षा मे वे ही सम्मिलित हो सकते है जिनकी आयु 31.12.1997 को 17 वर्ष या अधिक है । सम्पूर्णानन्द सस्कृत विश्वविद्यालय से विज्ञान विषय लेकर मध्यमा उत्तीर्ण अभ्यर्थी भी बी.ए.एम.एस. पाठ्यक्रम मे प्रवेश हेतु सयुक्त परीक्षा मे सम्मिलित हो सकते है । बी.यू.एम.एस. पाठ्यक्रम मे प्रवेश हेतु आवेदन करने हेतु केवल वे ही अभ्यर्थी अर्ह है जिन्होने इण्टरमीडिएट परीक्षा (जीव विज्ञान ग्रुप) उत्तीर्ण करने के साथ ही उर्दू विषय के साथ हाई स्कूल अथवा कोई समकक्ष प्राच्य परीक्षा भी उत्तीर्ण की हो । सन्दर्भित समस्त पाठ्यक्रमों में प्रवेश श्रेष्ठता सूची तथा अभ्यर्थियो द्वारा आवेदन पत्र मे सूचित विकल्प के आधार पर किया जायेगा ।

सयुक्त प्रवेश परीक्षा (सी.पी.एम.टी. 97) मे सम्मिलित होने हेतु निर्धारित आवेदन पत्र रु. 50.00 मूल्य पर कुलसचिव, श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर के कार्यालय से कार्य दिवस पर प्राप्त किया जा सकता है । साथ ही आवेदन पत्र राज्य विश्वविद्यालयों के कुलसचिव के कार्यालयो से भी लखनऊ, आगरा, इलाहाबाद, बरेली, फैजाबाद, गढवाल श्रीनगर (तथा कैम्प कार्यालय देहरादून), जौनपुर, झाँसी, गोरखपुर, मेरठ, नैनीताल, वाराणसी से भी निर्धारित मूल्य पर प्राप्त किये जा सकते है ।

समस्त विश्वविद्यालयों के कार्यालय से आवेदन पत्रो का विक्रय दिनाक : 20.1.1997 से प्रारम्भ होगा तथा दिनाक : 15.3.1997 को बन्द हो जायेगा । जो अभ्यर्थी आवेदन पत्र पजीकृत डाक से चाहते है उनसे अपेक्षित है कि वे रु. 85.00 के बैंक ड्राफ्ट के साथ, जो वित्त अधिकारी, श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर के पक्ष मे हो तथा कानपुर मे देय हो सलग्न कर कुलसचिव, श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर को दिनाक : 28.02.1997 तक आवेदन करे । आवेदन पत्र के साथ बैंक ड्राफ्ट के अतिरिक्त अपना पता लिखा 24x31 से.मी. नाप का लिफाफा सलग्न करना भी आवश्यक है । डाक से प्राप्त होने अथवा वितरित होने मे किसी प्रकार के विलम्ब का दायित्व विश्वविद्यालय का नही होगा ।

पूरी तरह भरे तथा वांछित पूर्तियो सहित आवेदन पत्र रु. 200.00 के बैंक ड्राफ्ट जो वित्त अधिकारी, श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर के पक्ष मे तथा कानपुर मे देय हो, के साथ कुलसचिव (सी.पी.एम.टी.), श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर के कार्यालय मे केवल पजीकृत डाक/स्पीड पोस्ट के माध्यम से दिनाक : 28.2.1997 तक स्वीकार किये जायेगे । आवेदन पत्र रु. 50.00 विलम्ब शुल्क के साथ दिनाक : 15.3.1997 तक स्वीकार किये जायेंगे । निर्धारित तिथियो के बाद कोई आवेदन पत्र किसी भी दशा में स्वीकार नही होगा । कोरियर सर्विस से भेजे गए आवेदन पत्र स्वीकार नही होगे ।

सयुक्त प्रवेश परीक्षा (सी.पी.एम.टी. 97) मे अभ्यर्थियो को भौतिकी, रसायनशास्त्र, बनस्पति शास्त्र, जन्तु विज्ञान एवं हिन्दी विषयो की परीक्षा मे सम्मिलित होना होगा । साथ ही इण्टरमीडिएट परीक्षा अंग्रेजी विषय के साथ उत्तीर्ण न होने वाले अभ्यर्थियों को अन्तिम रूप से चयनित होने के बाद पृथक से अंग्रेजी की आयोजित परीक्षा उत्तीर्ण करना आवश्यक होगा । सभी विषयो के प्रश्नपत्र वस्तुनिष्ठ (objective) परीक्षा प्रणाली के होगे । सयुक्त प्रवेश परीक्षा सी.पी.एम.टी. 97 सम्बन्धी समस्त पत्राचार कुलसचिव (सी.पी.एम.टी.), श्री शाहू जी महाराज कानपुर विश्वविद्यालय, कानपुर-208024 के पते पर किया जा सकता है ।

डा. राधे श्याम बंसल
कुलसचिव

PHYSICAL RESEARCH LABORATORY

Ahmedabad 380 009

The Physical Research Laboratory makes four awards called "Shri Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Awards", every two years from funds kindly provided by Pujya Shri Mota of Hari Om Ashram of Nadiad. These awards will be made to Indian Scientists, who are below 45 years of age, on 1st January 1997 for original work in the following fields:

1. Space Sciences (including Astronomy, Astrophysics, Planetary and Atmospheric Sciences).
2. Space Applications (in the areas of Meteorology, Hydrology, Remote Sensing and related ground truths)
3. Electronics, Informatics, Telematics and Automation.
4. Systems Analysis or Management including non-linear, non-equilibrium systems in natural and social sciences and technology.

Although the overall work of the candidates would be taken into account, the work done in India would be given prime consideration.

The candidate should have to his credit at least one or more of the following achievements

1. Significant achievement in scientific research.
2. Important and successful adaptation of new technology
3. Planning, development and implementation of systems in the context of science and technology

The selections for the year 1997 will be completed by January 1998 and the awards presented on 12 August 1998

The last date for receiving nominations is September 15, 1997 Sponsors are requested to send two page note (12 copies) summarising the contributions and achievements of the sponsored candidate together with his/her biodata, complete list of publications (with the names of the authors in the order in which they appear in the publications), reprints of five most important publications during the last five years (6 copies) in a cover marked 'confidential', addressed to the Director, Physical Research Laboratory Navrangpura, Ahmedabad 380 009

More detailed information will be asked for by the selection committee if considered necessary

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KASTURBA HEALTH SOCIETY'S

MAHATMA GANDHI INSTITUTE OF MEDICAL SCIENCES

P.O. SEVAGRAM, WARDHA-442 102.
MAHARASHTRA

ADMISSION NOTICE

(MBBS course for the academic year 1997-98)

Applications are invited on prescribed form for admission to MBBS course starting from **1st August 1997** The candidates shall be selected as per their merit in the Entrance Examination to be held on **25th & 26th May, 1997** at Nagpur, New Delhi Hyderabad and Bombay Those who are going to appear in 10 + 2 Higher Secondary Board Examination in March/April 1997 are also eligible to sit in the competitive Entrance Examination The Prospectus and Application Form with syllabus & question papers of the last 5 years can be had from the office of the Dean by remitting a sum of Rs 350/- + Rs 20/- (for postal charges by Money order only) in favour of the **Dean, Mahatma Gandhi Institute of Medical Sciences, Sevagram, District Wardha-442 102** or by cash from the college counter. Candidates should write their full address in capital letters in the money order coupon

The last date of receipt of application with Entrance Examination fee of Rs 750/- is **7th April** and with an additional late fee of Rs 100/- is **15th April** The Prospectus and Form will be available from **5.1.97**

Eligibility : The candidate who will be completing 17 years of age on 31/12/1997

The candidate must have passed 12th standard examination under 10 + 2 system of Maharashtra State Higher Secondary Education Board or any equivalent examination of any recognised Board or any Indian University with English Physics, Chemistry and Biology in one and the same attempt with minimum 50% marks (40% in the case of SC & ST including VJ & Nomadic Tribes)

The admission is subject to any direction given by the Hon'ble Supreme Court of India, Hon'ble High Court of Bombay Bench, Nagpur and the MCI.

Dr. O.P. Gupta, Dean

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P.B. SHARMA

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K.K. Bajaj

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JAWAHAR LAL JAIN

Drugs in Sports
— Present Scenario

J.S. BAJAJ

National Health Policy
— Convocation Address

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Association of Indian Universities

ADMISSION NOTICE

INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH, MUMBAI

(Deemed University)

An Advanced Research Institute
Established by the Reserve Bank of India

M.PHIL./Ph.D. PROGRAMME IN DEVELOPMENT POLICY : 1997-98

IGIDR invites applications for admission to its M Phil/Ph D Programme commencing in August 1997 The Institute, a Deemed University under the UGC Act conducts a M Phil/Ph D Programme in Development Policy The M Phil Programme is of two years duration and the Ph D is normally expected to be completed within four years of joining the Institute Only those candidates who pass a set of Comprehensive Examinations in the first two years after admission to the Institute will be eligible for admission to the Ph D Programme

A. Eligibility : Minimum qualifications for admission include one of the following degrees or their equivalents (i) M A in Economics with at least 55% marks (ii) MBA/MMS with at least 60% marks and with a Bachelor's Degree in either Economics Engineering or the Physical Sciences (iii) M.Sc. in Physical Sciences Mathematics Operations Research or Statistics with at least 60% marks (iv) M Tech B Tech, B E or equivalent with at least 60% marks (Note Prior knowledge of Economics, while helpful, is not essential for the Programme However, acquaintance with some Mathematics, esp. Calculus is essential) Candidates who expect to complete the qualifying exams for these degrees before 15th July 1997 may also apply

B. Financial Assistance : *The Students pursuing the Programme will receive a monthly* stipend of Rs 4000 for the M Phil Programme and Rs 5000 once they qualify for the Ph D Programme, subject to their fulfilling the terms and conditions framed by the Institute from time to time, in this regard All students are required to provide Research Assistance to faculty members The first semester begins in August 1997 Tuition fees for the Programme are Rs 1500 per semester. Limited multi-seated hostel accommodation is available on the campus

C. Admission Procedure : Selection will be based on the candidate's past academic record and performance in the written test and interviews conducted by the Institute The decision of the Selection Committee will be final

Application Forms : Prospectus and application forms can be obtained from the Admissions Office, IGIDR, Gen. A K Vaidya Marg, Goregaon (East) Mumbai-400 065 on payment of Rs 100 in cash (non-refundable) at the Institute's office during Monday-Friday or by writing to the Admissions Office and enclosing a crossed Bank Draft for Rs 100 in favour of IGIDR payable at Mumbai Payment in any other form will not be accepted Completed applications must be received latest by **March 25, 1997.**

Written Test and Interview All shortlisted candidates will be required to appear for a written test with an emphasis on quantitative skills and the candidates found suitable will be interviewed The test and interviews will be held in Mumbai in June/July 1997. Second class return rail fare by the shortest route will be paid to all the candidates appearing for test/interview

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Editor :
SUTINDER SINGH

Excellence in Higher Technical Education

P.B. Sharma*

Profile of Growth

Higher technical education in India dates back to 19th century when Thomson College of Civil Engineering was established by the British at Roorkee in 1847 to impart degree level education in Engineering & Technology. The setting up of the Tata Institute of Science at Bangalore in 1909 provided the initial impetus to the growth of technical education in India. The setting up of Delhi Polytechnic in 1940, later named as Delhi College of Engineering, and College of Technology at Guindy, Madras in 1944, helped in the development of centres for creation of quality manpower to man the industries in pre-independent India. In fact when India became independent, there were 46 institutions in India of which, 42 offered undergraduate degree level programmes while only 4 offered postgraduate programmes. Soon after independence India launched a major programme of expansion and diversification of higher education in all sectors including agriculture, medicine and engineering.

Table I depicts the profile of growth of higher education in the country during the period 1950-1992.

Table I

Growth of Higher Educational Institutions in the Country over the Period 1950 to 1992

Institutions	*1950*	*1960*	*1970*	*1980*	*1989*	*1992*
Universities	37	65	109	129	179	194
Engineering Colleges	58	118	163	226	283	342
Medical Colleges	30	61	100	108	139	150
Dental Colleges	3	6	9	13	35	56
Agricultural Colleges	33	81	108	117	132	150
Total	161	331	489	593	768	892

Sources: 1. Outturn of Scientific & Technical Manpower in India, CSIR, Vol. II Engineering & Technology, 1993

2. Engineering Manpower Development — A National Perspective, Report DCE/NC/94, Nodal Centre, Delhi College of Engineering, Sept. 1994

Table II gives the profile of growth of higher technical education in India over the period of 1947-1989.

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* *Principal, Delhi College of Engineering, Kashmere Gate, Delhi-110 006.*

Table II
Number of Engineering and Technology Institutions from 1947 to 1989

Year	*Institutions*	*Programme at Different Levels*			
		Doctorate Degree	*Master's Degree*	*P.G. Diploma*	*Bachelor Degree*
1947	46	0	4	0	42
1950	58	1	6	1	53
1955	80	1	14	2	74
1960	118	2	27	5	111
1965	151	7	37	9	114
1970	163	20	62	14	155
1975	179	32	84	22	169
1980	226	41	94	19	216
1985	358	58	115	16	347
1989	383	74	143	17	372

Source: Outturn of Scientific & Technical Manpower in India, CSIR Vol. II Engineering & Technology, 1993

It is pertinent to note that the growth in higher technical education during the above period is approximately 600% which is significantly higher than that in the agriculture, 500% and Medicine, 500% thereby indicating the high priority accorded to higher technical education in the successive 5 year plans. Engineering and technology educational institutions offering degree and higher degree programmes have grown from 46 in 1947 to 342 in 1989.

The 7-fold increase in the number of institutions till 1992 has resulted into a cumulative turnover of staggering by high numbers of highly qualified workforce comprising 6614 doctorate degree holders, 71,408 holding masters' degrees and over two lakh bachelors' degree holders. Tables III, IV and V give details of the outturn of B.E./M.E. and PhDs for the period 1984-92

Table III
State & Union Territory-wise Total Outturn of Doctoral Degree Holders in Engineering

Name of State	*Number of Doctorate Degree Holders in Engg*		
	1950-1983	*1984-1989*	*1950-1992*
Andhra Pradesh	51	89	140
Bihar	18	42	60
Chandigarh	-	20	20
Delhi	423	366	789
Gujarat	41	43	84
Haryana	28	29	57
Karnataka	624	286	910
Kerala	1	9	10
Madhya Pradesh	44	31	72
Maharashtra	590	285	875
Orissa	10	5	15
Punjab	7	18	25
Rajasthan	22	18	40
Tamil Nadu	490	302	792
Uttar Pradesh	832	397	1229
West Bengal	426	388	814
Total	3607	2328	6614

Source: NTMIS, Nodal Centre Report, DCE, 1994.

Table IV

State & Union Territory-wise Total Outturn of Master's Degree Holders in Engineering & Technology for the period 1950-1989.

Name of State	*Number of Master's Degree Holders in Engineering & Technology*		
	1950-1983	*1984-1989*	*1950-1989*
Andhra Pradesh	2592	1653	4245
Assam	13	97	110
Bihar	682	538	1220
Chandigarh	919	304	1223
Delhi	2373	2263	4636
Goa	44	54	98
Gujarat	1526	407	1933
Haryana	261	200	461
Karnataka	5032	2641	7673
Kerala	1443	755	2198
Madhya Pradesh	1004	799	1803
Maharashtra	6070	2829	8899
Orissa	143	219	362
Punjab	242	318	560
Rajasthan	707	853	1560
Tamil Nadu	7152	4965	12117
Uttar Pradesh	8075	3871	11946
West Bengal	7364	3000	10364
Total	45642	25766	71408

State & Union Territory-wise Annual Outturn of Postgraduate Diploma Holders during 1984-1992

Name of State	*Number of Postgraduate Degree Holders in Engineering & Technology*	
	Number	*Percentage*
Bihar	120	5
Delhi	137	6
Gujarat	164	7
Karnataka	89	4
Maharashtra	174	8
Rajasthan	135	6
Tamil Nadu	178	8
Uttar Pradesh	1166	52
West Bengal	96	4
Total	2259	100

Source : Outturn of Scientific & Technical Manpower in India, CSIR, Vol. II Engineering & Technology, 1993.

Table V

Outturn of Bachelor's Degree Holders in Engineering & Technology from different institutions, having the outturn of 2000 or more during the period 1984-1992.

Name of Institution	*Outturn from 1984-1992*	*Percentage of the Outturn*
Inst. of Engg. Cal.	*16440*	*7.6*
Faculty of Engg. & Tech., Jadavpur	3112	1.4
Delhi College of Engg.	2880	1.3
Govt. College of Engg. Pune	2763	1.2
Faculty of Engg. & Tech. Vadodara	2723	1.2
College of Engg. Trivandrum	2585	1.1
Ms. Ramaiah Inst. of Tech., Bangalore	2467	1.1
L.D. College of Engg. Ahmedabad	2379	1.1
Manipal Institute of Technology, Manipal	2214	1.0
Birla Vishvakarma Mahavidhyalaya, V. Vidhya Nagar.	2200	1.0
Regional Eng. College, Srinagar	2116	0.97
Institute of Elect. & Telecom Engg., Delhi	2077	0.96
University of Roorkee	2073	0.95
Zakir Husain College of Engg. & Tech., Aligarh	2054	0.94
Govt. Engg. College Jabalpur.	2037	0.94

Source : NTMIS, Nodal Centre Report, DCE, 1994.
The total contribution is approximately 23.76% of the total outturn from 342 colleges.

The setting up of IITs in the 1960's have provided a major thrust in the direction of postgraduate education and research comparable to the world standards. The IITs alone have produced 6500 master's degree holders, and 3000 doctorates besides over 35000 bachelors in technology. In fact the IITs contribution to PG's and Ph.D.'s greatly out members the engineering colleges in India. While the outturn of IITs is undoubtedly high as per the Indian standards, it is important to realise that the students population in IITs is nothing comparable to the reputed universities and institutions in advanced countries.

The IITs, however, have retained their focus on quality of their produce and it is this factor alone which has established them as the centres of excellence in technology education and research. The only other institutions in India which are able to match the IITs in terms of the quality of education and research are IISc Bangalore (formerly Tata Institute of Science) and to some extent the University of Roorkee. The IITs have undoubtedly contributed to brain-drain but the phenomenon is not so much because of the education in the IITs but the attractions which the advanced West provided to the talented bright graduates of these institutions. While the IITs still continue with their focus on quality and are able to attract the very best to join the faculty as well as the academic programmes, the engineering colleges are increasingly becoming least attractive for the young talents to join the faculty positions. This, in turn, has become one of the major impediments for improvement of quality of teaching and research in these colleges and has seriously hampered their quest for excellence.

It is with this background one has to see the manpower support currently being provided by the engineering institutions in the higher technical education sector. The Indian industry is largely dependent upon 330 odd colleges for its manpower needs. The best from the IITs and other pioneering institutions continue to migrate abroad contributing to brain-drain which has assumed alarming proportions lately.

Regional Imbalance

The regional imbalance is clearly depicted in Table VI.

It may be seen that the two states, namely, UP and Bihar, having the highest population, have the least number of engineering degree level institutions whereas, the smaller and less populated states, namely, Tamilnadu & Andhra Pradesh have 48 and 34 degree level engineering institutions respectively. In fact, based on state population, UP has 0.11 institutions per million whereas, the figures for Tamilnadu & Andhra Pradesh are 0.84 and 0.49 million respectively. As of today, 2/3rd of the total number of engineering colleges are located in the southern part of India whereas, the Central, North, West and East combined have only 1/3rd of total engineering colleges. What is difficult to understand is that while the southern states allowed the privately owned mushroom growth of teaching shops-cum-engineering colleges during the 70s and the 80s, the states, beyond Andhra Pradesh in the upper India, played a deaf ear to the emerging needs of manpower development in engineering and technology. The AICTE has, by now, granted its charter to most of these privately managed engineering colleges with ease and speed! The prime issue is as to what sort of growth of higher technical education can be considered feasible for the states where such a massive expansion of technology has not taken place? The regional imbalance is a problem to be tackled within the constraints of massive unemployment of engineering graduates as at present

Table VI
Regional Imbalance in respect of location of Engineering Institutions in India

Name of State	*Number of Engg. Institutions*	*Per Million Population*
Maharashtra	92	1.12
Tamil Nadu	48	0.84
Andhra Pradesh	34	0.49
Delhi	4	0.40
Madhya Pradesh	17	0.25
Bihar	10	0.11
Uttar Pradesh	16	0.11

The Professional Societies

Besides the engineering colleges and the IITs, the professional societies such as Institution of Engineers (India), Aeronautical Society of India, Indian Metals Society, Institution of Electronics & Telecommunication Engineers (IETE), etc have made significant contribution to the continuing education of the serving engineers. Table VII shows the outturn from the professional Associateship Examinations to the growth of engineering & technology manpower in India over a period of 1990 to 1992. It is important to realise that the Associateship Examination of these professional societies, approved as equivalent to the degrees of the universities, is of special significance as these examinations are specifically designed for the professional proficiency besides the preparation for the modern requirement for engi-

Table VII

Associate Membership Examination — No. of candidates passed during period - 1990 to 1992

Specialisation	*B.E./B.E. Tech.* *B.Sc. Engg.*
Aeronautical Engineering	223
Ceramics Engineering	299
Chemical Engineering	9219
Civil Engineering	56089
Electrical Engineering	24120
Mechanical Engineering	52747
Metallurgical Engineering	3669

Source "Relevant Technical Manpower Development Challenges Ahead" Review of NTMIS - 93.

neering & technology design, manufacturing and managements. The role of these professional societies has, however, so far been supplementary to the higher technical educational institutions but now onwards, these societies are to increasingly meet the requirements of effective linkages between the industries and the institutions They are to re-design their courses for effectively imparting continuing education to assure a competitive edge for the work force in engineering and technology pursuits. These societies have, therefore, to expand their wings to encompass a greater horizon of educational and professional activities than they have catered to so far. Besides the re-orientation in the institutional objectives, it is the management structure of the institutions that needs to undergo drastic changes along the direction of TQM.

Total Quality Management of Technical Education System

Total quality management has recently become highly relevant as a management philosophy for the higher technical institutions. The demand of quality assurance at world standards as per ISO 9000/IS 14000, coupled with the pressure of global competition is causing compulsions, both in the manufacturing as well as in the service sector of the economy to re-orient the management perspective. It is not only the quality of the end product but the quality in everything that has to be the main thrust of this new management initiative. Besides quality, the productivity is the second most important concern in the modern competitive environment.

Higher technical educational institutions are to meet the challenges of human resource development commensurate with the emerging requirements of the industries and the service sector organisations. The management of higher technical education has therefore to gear itself to meet these challenges. The idea is to practice TQM as a management philosophy within the four walls of the institutions so that the students gain, besides knowledge, the attitudes and the work ethics vital for the success in today's highly competitive world. They have also to exhibit a greater commitment to the society and the environment to which they rightly belong and to which they aspire to serve.

Further, the role of higher technical education has evidently become highly significant, specially in view of the added constraints of technology upgradation in the industries. This exercise is to be carried out more frequently than in the decades of 70s and 80s. The oil crisis of 1974 has updoubtly accelerated the pace of development of energy efficient systems. The requirements of R&D, energy audit and environmental considerations have thrown new challenges to engineers and these have been to some extent met in both the developing as well as the developed countries. However with the beginning of the era of globalisation of economy, the engineers have been brought face to face with many new challenges. These include quality assurance at world levels, productivity to remain cost competitive, highly innovative product designs to ensure conservation of energy and environment and expert maintenance support for trouble free operation. In addition, the engineers of today as well as, the engineers of tomorrow have to exhibit a much greater concern for the society and the environment. The human face of technology has to become more evident in pursuits of engineering excellence from now onwards so as to achieve a greater public appreciation of engineering and technology advances and their impact on the quality of life of people.

The Pressing Problems

Against the above new requirements, the higher technical educational institutions in India are presently facing a number of teething problems arising out of faculty shortage, obsolescence in the laboratories, upgradation of skills of the technicians and above all the resource crunch. The management of these institutions has so far kept itself almost aloof to the management practices prevailing in the industries. As a result these institutions have become highly unproductive besides exhibiting a perpetual divorce with the industry and the society. It is important to realise that it is the pressure of the market competition that keeps the industries on their toes. The lack of competition in the higher technical education sector and easy inflow of funds in the past has made these institutions somewhat complacent. In the emerging economy environment, it is the human resource that will be the most significant ingredient for the success of an organisation. The management of higher technical educational institutions has therefore to gear itself up to the call of total quality management so as to produce the relevant human resource at a competitive investment. These institutions have also to provide the necessary environment for the development of technology and expert knowhow for the industries.

Faculty Development

India today has around 340 engineering degree level institutions besides 5 IITs and the Indian Institute of Science. Almost half of these institutions are under private management. These institutions as well as those under the government control are facing the problem of lack of motivation and interest in the teaching faculty and technical staff. These problems are to be tackled first if the higher technical education is to remain a vibrant entity in the rapidly changing economy environment.

The IITs which have enjoyed the benefit of foreign collaborations, have undoubtedly created an excellent infrastructure though at enormously high investment. However, the IITs have not been able to reduce the dependence of Indian industries on technology and knowhow import. The IITs do not have the problem of faculty shortage nor the obsolescence in the laboratories except in emerging areas. It is primarily because of an efficient recruitment policy and attractive environment for R&D in these institutions that the IITs have been able to attract the talented youth to join the faculty positions. Given the present level of expertise and infrastructure, the IITs can serve the nation in the changed economy environment with a much greater contribution to relevant manpower development besides R&D and Technology Transfer. This will, however, significantly depend upon the IITs management, re-orienting its present management philosophy towards TQM so as to nurture excellence alongside with relevance. Gradually, these centres of excellence are to become centres of relevance in higher technical education if the nation is to benefit from their expertise and infrastructure. The support of the IITs in the early 70s to other engineering colleges, through QIP programmes for faculty development and Curriculum Development Cells has gradually declined. There is an urgent need to revitalise these programmes both for the faculty development of the engineering colleges as well as for upgrading the course curriculum and the laboratories.

The regional as well as the other degree level institutions are to concentrate on attracting motivated talented youth to join the faculty position. Well designed personnel policies providing incentives and rewards for the talented having the provision of weeding out the dead wood from these institutions are highly called for. It must be realised that there is no lack of talent in India; after all, we are exporting talented youth to the advanced West. It is only the lack of appreciation of teaching profession and the unattractive work environment that deters the talented youth to opt for a teaching career in India. Compared to this the teaching career is highly attractive and rewarding in the advanced West. If the nation has to succeed in the today's economic environment, it is absolutely essential that a much greater attention is paid to make teaching career in engineering institutions highly attractive. For, if we fail to re-vitalise the HRD in higher technical education, we shall not be able to turn the threats of globalisation into the opportunities for growth and development.

Attracting Motivated Faculty

Engineering institutions continue to receive the very best highly motivated school leavers who come to the engineering colleges with the expectations of catching up with the state of art in science and technology and to receive training in design, manufacturing and managerial functions which will be required of them four years from the date of their entry to a college. It is in this respect that the role of the engineering institutions and the engineering teachers in particular is important. The teachers in engineering institutions have to keep themselves fully informed of the latest developments in engineering science and engineering technology. They themselves have to be seekers of more and more knowledge and must be able to assimilate the growth of knowledge in their teaching scheme. A high degree of commitment and calibre is called for from the teachers in engineering institutions. The task before the management of technical institutions of attracting the motivated ones to join the faculty is truly monumental.

The faculty shortage is not easy to explain given the fact that the turnout of postgraduates and Ph.D degree holders in engineering and technology in India has been phenomenal over the last two decades. The IITs, alone have produced over 3000 Ph.Ds and 4000 Master's degree holders over the last fifteen years. Why such a highly qualified work force does not turn toward teaching is something worth researching in India. Compared to this in US there is a mad rush for the teaching positions!

Seen from the salaries and promotional avenues, teaching profession has been made highly attractive by the last pay revision by AICTE. It has even lowered the recruitment qualification from master's degree to bachelor's degree for induction at the lecturer's level. It is worth noting that the *minimum qualification in universities in US is Ph.D* and so has it become in the case of the IITs where the lecturers are now inducted at a scale higher than that prevailing in other engineering institutions. The lowering of recruitment qualification to Bachelor's degree, the revision of scale and the provision of three tier (lecturer/Assistant Professor and Professor) system is not enough attraction to the Indian skilled and highly qualified manpower to join the engineering colleges needs a detailed study as the success of our technical education system hinges around the faculty —the teachers in engineering educational institutions.

The highly motivated and qualified professionals will be attracted to teaching only if the educational institutions provide an environment to enable them to flourish as expert technologists alongside with teaching. After all America, England, Japan and other developed countries have been successful in attracting the very best to teaching by giving a high priority to this profession as its quality and commitment directly affects the industrial advancement and the quality of human resource. In India the reluctance to join teaching is also because of the value system of our society which does not acknowledge or recognise the value of those *who create wealth while it fully acknowledges the* role of the managers and administrators of the wealth of the Nation.

The Role of an Engineering Teacher

There can be no two opinions that the role of a teacher is vital in the growth of technical education and in upholding the quality of human resource development. What is however not unanimously upheld is the view that the teacher in engineering institution should devote not only to teaching but also to R&D and Industrial consultancy. Teaching *activity should be given top priority is well under*stood but what is not acceptable is that the teacher teaches from the books and notes alone. With the explosion of knowledge in S&T the books and notes become fast outdated. The new techniques of mathematical analysis, computation, design & drafting and above all manufacturing and management technology which flood the academic world each year require teaching minds to engage themselves into an active research beyond literature surveys. After all what is to be taught is to become relevant four years later. The teaching process has, therefore, to dynamically assimilate the growth of knowledge into its teaching methodology. If done at the level of America or Japan, the teachers in engineering institutions will be the peers of knowledge and the institutions will be the centres of not mere learning but centres of the technology innovation and research. The teacher will then perform a triple role — a teacher, a scientist and an expert practicing technologist simultaneously. The ultimate beneficiary will be the students, the human resource for tomorrow. The industries will be highly benefited as they shall lean with confidence on the expertise available in the Indian institutions, and above all the government shall be relieved from the fiscal contribution to R&D as the bulk of R&D in the engineering institutions will then be largely funded from sponsored research and industrial consultancy. Technical education will then in true sense become "Education for wealth creation."

R&D in Educational Institutions

Teaching alone or teaching and research both as the responsibilities and job functions of teachers in engineering institutions is a matter still being debated in our country. There is a feeling which persists in academic circles that diversion of efforts of a teacher towards R&D usually sacrifices teaching interest. There are teachers who are highly devoted *to teaching and spend much of their spare time for* preparation of teaching material and innovate in teaching to sustain interest in the class. They obviously do not have much interest in research and development which besides being time consuming deprive them of the intellectual freedom which they enjoy as teachers. R&D being time bound and result oriented demands that the teacher devotes his considerable time to the success of the work which often involves managerial functions besides expert guidance. Being financially rewarding and means of recognition in the profession, R&D acts as a catalyst to sustain one's interest in innovation and create research. It also helps a faculty member aspire for a greater original contribution to the growth of knowledge and brings added satisfaction from the application of the knowledge to solve the real life problems. The teaching style of such teachers has a strong element of professional bias, highly relevant to the students who are to take up challenges in their professional career, once they leave the college. It must, *however, be realised that there is a basic difference* between teaching and research. Teaching unlike research requires excellent communication skills. The interest in teaching stems from one's desire to benefit the pupils from the depth of knowledge which the teacher possesses. This interest is further enhanced if those taught respond to learning. A researcher on the other hand works himself or at the most with his team on a challenging problem and his interest in R&D is basically from the satisfaction he derives from the outcome of his research. He creates the necessary facilities for his research from sponsored research and development projects and the hard work pays in the long run as his research establishes him in the profession. Further, the recognition of research is world-wide while a motivated teacher is at best recognised and rewarded within his university.

The students in engineering institutions are to be taught by those who take pains in sustaining the interest of the students by constantly updating their teaching material while at the same time commanding a high reputation practicing technologists, something similar to what is done in medical colleges.

Another point of interest here is in respect of funding of R&D in India. Table VIII provides, the sector-wise sharing of expenditure on R&D in India for the period 1990 to 1992. It may be seen that it is the government that is the major financer of R&D expenditure. The private industries only contribute per cent to this vital component of economy. In any case, the R&D expenditure in India is only 0 per cent of GNP while the developed nations spend up to 6 per cent of GNP on R&D. The poor spending on R&D speaks for the miserable position in respect of intellectual property generation in India. While, a higher allocation on R&D is essential, the higher technical educational institutions must perform a lot better in respect of effectiveness of their R&D activities.

Institution Industry Linkages

The academic environment in an engineering institution is to be enriched both by the analytical as well as practical aptitude Such an environment can be *effectively created* if the linkages between institution and the industries are strengthened. Such linkages should provide a dynamic environment in which the expertise from the R&D could be utilised by the industries and the real life problems and prospects of the industries are taken as challenges both by the expert faculty and the students Presently there is a limited scope of practical experience in technical education system. This is through the laboratory exercises and vocational training in the industries. This is not adequate as the laboratory exer-

Table VIII

Industrial Expenditure on Research and Development by Types of Expenditure

(Rs. Lakhs)

Sl. No.	Type	*Public Sector*			*Private Sector*			*Industrial Sector*		
		1988-89	*1989-90*	*1990-91*	*1988-89*	*1989-90*	*1990-91*	*1988-89*	*1989-90*	*1990-91*
1.	Revenue	24040.93	28814.01	30005.40	26270.49	29603.91	34074.30	50311.42	58417.92	64079.70
2.	Capital	9800.62	12178.03	14062.88	9327.94	11141.78	14923.06	19128.56	23319.81	28985.94
3.	Not Classified	370.83	298.06	338.75	5087.90	7049.48	2268.85	5458.73	7347.54	2607.60
	Total	34212.38	41290.10	44407.03	40686.33	47795.17	51266.21	74898.71	89085.27	95673.24

Source : Data collected and compiled by DST (R&D in Industry-1990-91) cises are basically aimed at illustrating the basic concepts and the vocational training by and large remains observational in nature.

The effective linkages between industry and the institution could take the form of MOUs allowing each other to take advantage of and to support each other's activities. Greater participation of students in solving the industrial problems can be ensured by designing project work in consultation with the industries. Such projects will provide a meaningful opportunity for the students to express their innovative and creative skills. The project work will thus induct the students into the research methodology even at the undergraduate level where the mind is often highly innovative and creative. It is also highly desirable that the students are provided much greater contact hours with the expert from the industries and R&D organisations so that they can effectively interact and perceive the value of their studies. Such visits can become more meaningful if a more direct linkage is established with the selected industries and organisations. The idea should be to involve the students in the real-life situations while they are still at the studies. Special courses with a committed intake designed specifically for the industries can also help develop the relevant human resource. The training and re-training of engineers can also be ensured through such linkages.

The linkages between the institutions and the professional societies are also highly important. Such linkages shall help inculcate an attitude of professionalism in the young minds and will help the student community aspire for a contribution to the profession to which they shall rightly belong on leaving the college.

The strengths and weaknesses of the present technical education system are required to be analysed in the context of the success or otherwise of the Indian industries and other related organisations. The problem of poor quality and remarkably high price of Indian products is perhaps an outcome of unenthusiastic technical human resource working in an uninspiring industry environment. While the technical education system has a strong bias for analysis and tutorial excercises, it has lacked the environment for the pursuit of excellence through innovation and creativity. It has not fully exploited the mental capabilities of its students nor has it given them the orientation necessary to enhance one's commitment to the cause of technology development for the betterment of the quality of life of the people of their country. The curriculum has also missed on educating its learners about the human face of technology.

Style of Management

The style of management of higher technical education in India has by and large lacked the appreciation of the role of the teachers, its faculty in the overall development of the institutions. It has lacked emphasis on people's development and has least cared for nurturing an environment programme of the 70s' and 80s' has, no doubt, improved the qualifications of the faculty but it has not largely benefited the institutions' academic or research programmes primarily because of lack of peer pressure on such individuals. They also lacked motivation to improve the institutions, laboratories and work environment. The management and the teachers still remain at loggerheads in respect of their expectations and aspirations. There is no meeting of the minds between the objectives of the institution and the growth and advancement of the faculty members.

The global economy scenario requires world class people who besides being globally competitive must practice a quality and productivity linked work culture. The educational institutions in the higher technical education sector have also to ensure that they have in their faculty and staff people who are world class having calibre and competence to remain knowledge workers throughout their working life. To cater to this requirement the style of management has to undergo a clear re-orientation in respect of :

- Recognition of achievements
- Empowerment of an individual
- Identification of talent
- Respect of one's capabilities
- Motivation for continuous upgradation of skills

The management must also clearly recognise that its responsibility is not only to attract the best to join its faculty and staff positions but also to ensure that they become better and better every day rather than becoming gradually dull and unproductive as is the case at present. The management of higher technical education must also have a greater faith in performance re-appraisal and feedback from its students besides exerting peer pressure for continuous quality assurance of its faculty and staff.

Curriculum Innovation

With rapid advances in science & technology, the fast decrease in half-life of knowledge acquired and with the emerging demands for flexible human resource development, it has become absolutely essential to restructure the course curriculum, design course structure with in-built flexibility as also to strengthen the inter-disciplinary component in engineering and technology courses. At the same time, a sound science base of modern engineering is to be provided. Care and concern for society and environment has to become a core of the engineering curriculum so that the engineers of today as well as the engineers of tomorrow become more responsible to the society to which they belong. They, then, in true sense, will be the pillars of strength of the economy and will be the prime movers of growth and development of a science and technology driven economy.

In order to succeed in our efforts at providing the much needed improvements in the course curriculum, it is absolutely essential that the dons in the educational institutions recognise the need for assessment of skills, aptitudes and knowledge requirements of the industries and organisations which recruit their products. Currently there is a total absence of such a feedback system. The dons overwhelmingly are conscious that it is they who know the best and it is they alone who can decide what is best for the academics. It is this blasphemy which is responsible for the daring obsolescence of the course curriculum and a deadlock on the interaction with the industries. The dons must understand that because of visible compulsions of global competitiveness the industries foresee the technology and human resource requirements faster than the institutions do. In fact the industries are conscious of their requirements and they gear their management to meet the challenges which the market driven economy assigns to them. The dons of the universities and colleges being self-proclaimed experts, these visionaries of growth of knowledge continue to refuse the role of the practitioners of technology in affecting the change in the academic thinking. The Indian dons are undoubtedly more sensitive in this respect than their counterparts in the advanced West where the quality and productivity have percolated in the university circles as much as in the industries. This position needs immediate change lest the universities and colleges should be declared places of technology & educational obsolescence.

Funding of Higher Technical Education

Higher technical education is highly expensive specially if one has to cater to the needs of the modern day requirements of a quality and productivity linked educational system. The funding of higher technical education is bound to cause serious concern specially when higher technical education and research is becoming increasingly expensive day by day. The cost of the modern day laboratory in polymer technology is of the order of 3 crores. A modern computational laboratory catering to the needs of a batch of 40 students will cost around 2 crores; a modern day electron microscope would cost around 1 crore; a 3-D laser Doppler Animometer requires an investment of 1 crore to set up a laser measurement laboratory; just to give some idea of the cost involved for modern laboratories and equipments. The average expenditure on producing an engineering graduate varies from approximately Rs 14,000 in institutions like DCE to about 3,00,000 in the IITs. The VIII Five Year Plan has provided a total of Rs.1000 crores for technical education, being largely funded by the government exchequer, while the outturn of these institutions are being utilised mostly by the private industries and organisations.

A serious question being asked is why should a common man pay for the expenditure of someone who is worth Rs. 10,000 or more per month in the private sector on graduation ? The Govt of India and the AICTE have had a singular approach in this regard and this thinking has resulted into a single point agenda of increasing the tuition fees to be charged from the students. What the Ministry of HRD and the AICTE have missed is that they have not appreciated the capabilities of the faculty to produce wealth through industrial consultancy and through effective utilisation of the infrastructure in the universities and the colleges. It is painful that while the industry starves for the expensive equipments and instruments for testing and quality certification, the institutions continue to utilise such highly expensive instruments and equipments merely for training and education for a few hours per week. Such equipment, if used for industrial work along with teaching, can produce wealth for the institutions. It is this form of resource generation which will offset the pressure on tuition fees besides assuring a greater utilisation and return on investment in modernisation of the laboratories and equipment. The other idea could be to motivate the large business and industry houses to support the cause of laboratory modernisation in the educational institutions, even naming these laboratories in the names of the Tatas, Birlas and others may not be a bad proposition provided they fund the modernisation of the laboratories to relieve the exchequer from the burden of funding a sector of HRD largely to be utilised by private industries and organisations. A clear re-thinking is required in this respect. The increase of fees is not the only solution to the problem of resource crunch. Other avenues of a greater and effective utilisation of in-house talent and infrastructure must be explored so that the talented ones who cannot pay for their education, can also make it to higher technical education.

Concluding Remarks

- The management of higher technical and management institutions in India has so far lacked emphasis on quality of the system or monitoring of its productivity. Compared to this, quality culture and productivity movements are the backbone of the success of the modern industries. Time has come when higher technical educational institutions who contribute one of the most important Ms, i.e. the manpower, adopt and practice Total Quality Management (TQM) as the management philosophy.
- Excellence in higher technical education is always talked about. But the excellence alone is not a sufficient condition for the development of quality of human resource. It is the focus on relevance that is equally necessary so that the emergent as well as the long term needs of the country could be effectively met.
- The productivity in higher technical educational institutions is seriously affected by the quality of teachers. Teachers must therefore be highly motivated and committed to the cause of teaching, research and industrial liaison. Attracting talented youth to join the faculty is a monumental challenge to the management of these institutions. There is an urgent need to review the personnel policies in this respect.
- Teachers in higher technical educational institutions have to enhance their activities beyond teaching. They have to perform a triple role — the role of a teacher, a scientist and a practising technologist simultaneously. It is only then that their profound wisdom will be an instrument of social change and will undoubtedly be the guiding spirit for the improvement of quality of life of the people at large.
- Technology development, technology transfer, increased R&D and prototype development are to be given added impetus in the higher technical educational institutions to meaningfully utilise the expertise of the faculty and the infrastructure.
- Heavy expenditure on modernisation of laboratories, library books and journals, and high speed computational facilities necessarily demands resource sharing between the institutions, R&D organisations and the industries. A part of the solution to resource crisis lies in networking of resource/facilities. A more productive utilisation of infrastructure, laboratories and the talent and skills of the faculty and staff is an essential aspect of resource generation.
- The management of higher technical education has therefore to adopt TQM as a management system so as to make this sector of economy both competitive and quality conscious while at the same time improving its linkages with the industries and the society.

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References

1. *Engineering Manpower Development — A National Perspective*, Report DCE/NC/94, Nodal Centre, Delhi College of Engineering, Sept 1994.
2. Qasim, S.Z. "The Role of Technology in the Globalized Indian Economy", Inaugural Address, Nat. IEEE Sem., DCE, also *STAND* Vol. VI, Pp. 25-27, Feb. 1993.
3. Sharma P.B. & Gupta P.K. "Quality & Productivity in Technical Education", Theme paper, *Proc. of EME National Conference*, NAFEN, July 1993.
4. Khanna S.K. "Challenges of Higher Technical Education in India", *Convocation Address*, DCE, Sept.1993.
5. Sharma P.B., "Management of Engineering Institutions — New Challenges", *International Jr. of Engineering Education, USA*, 1994.

Student Support Services for Interactive Communication in Distance Education

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In a wide and more liberal vision of the world in which intellectual contact and exchange are now fundamental imperatives rather than dispensable luxuries, higher education is undergoing fundamental changes in its quality, content and approach. Universities are now no longer social mobility ladders or a slave through which better placements and better paying jobs alone could be available. In spite of this, they guard the frontiers of knowledge and continue to offer broad spectrum of programmes without caring for the maelstrom of political and social forces and recurring resource limitations. It is against this background that higher education is now looking beyond institutional framework and is crafting entirely new alliances and imperatives. Besides this higher education is now a factor of mass education and social responsibility even though only 6% of the eligible age group (17-24 years) participates in it in India. All the same the present shift is towards economy, efficiency and effectiveness.

All open universities are expressions of an educational design which is framed in a particular concept of learning change relationship depending upon vision, concept of human needs, adaptive capacity and ethical commitments. They are synergic learning systems and their establishment has signalled a substantial change in the mode of delivery of higher education. In fact, open universities stand, or should stand, as systems which exist to transform the socio-economic basis of opportunity, participation and equality and they should liberate people from constraints which adversely affect their life chances. Barriers of space, time, income, ethnicity, language and class are expected to be removed through the emancipatory actions of open universities. This has to be more so for the reason that the direction of higher education is fast changing from being a cultural luxury to people's empowerment and now people have started going in for further or continuing education as their passwords. Right to learn is now an indispensable tool for the survival of humanity. Demand for recurrent education is growing.

In India there has been an impressive increase in the number of educational institutions since independence, yet, with the large progressive increase in the number of students year after year it has become increasingly difficult to provide additional space and amenities to cope with their demand for higher education, and, because of the inability of the universities and colleges to innovate and change, and, the higher unit cost of education in these. The conventional system also faces constraints on account of socio-economic and regional disparities which have made uniform spread of financial inputs and attainment of social goals difficult. In the process it is only the open universities which have to accommodate the overflow of students and at present this system with a network of seven open universities and forty seven conventional universities offering courses through distance mode, accommodates about 13 to 14% of about 6 million students in higher education now. This is a far-reaching educational reform which promises lifelong learning opportunities to desirous students in unserved areas.

As the system has matured and established its credibility with its matching capacity to reach the students all over to meet their future demands for new courses, it has to take into account the challenge of a unique mix of students with their diverse problems that it has to address. Besides this, multiplicity of subjects, combinations, contents, relevance, delivery system pose yet another set of issues before it.

In India while the open universities and other dual mode distance education institutions are offering a variety of arts, commerce, science, vocational and technical courses to a vast cross section of students spread all over the country, there is a felt need to achieve a baseline of consistency in standards of academic courses and student support services all

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over. Distance education mode now offers courses in almost every field including new frontiers of technology, management, vocational and technical subjects, agricultural areas besides conventional arts, commerce and science related subjects. This shows that it has a diverse clientele. Students' requirements are diverse and different and in the obtaining scenario it is only the print media which continue to dominate as if it were the sole saviour to sustain the system. There is no doubt that the self instructional printed lessons are the foundation of any academic course to sustain it but the quality, comprehension level, content, applicability and outreach of the printed material are now a matter of greater concern to our distance education management effort. While the distance education institutions have been thriving on the unidirectional supply and flow of information to students through printed lessons because of the small reach of technology in India yet in the time to come the demands and requirements of students will necessitate a complete conceptual and practical overhaul in its delivery system and call for a more articulate and systematic contextually relevant student focused support system to supplement the quality and content of such courses.

There is no doubt that distance education is now a high demand area. It provides the answer to the contemporary challenge of access, equity, cost and flexibility in higher education. It is the latest educational culture both in the developing and developed countries. It is looked upon as an alternative with a social outlook which promises to bring about social gains through numerous technology assisted inputs. It is now a fast expanding system which has a strong scientific and management base to ensure it success. But all these attributes of the system can be socially acceptable only if the focus is not merely on entry rules, flexibility in course choice and timeframe but on student support services. By student support service is meant all such inputs as contribute to the enhancement of the level of comprehension of the student. Student here is more important because he is entirely different from what we have in our conventional system. Students' requirements and characteristics are patently different from those of the students in conventional universities and colleges. Even the operational features of an open university or a directorate of correspondence courses as it is called in India, are different from those of an established university or college excelling in its academic attributes through its committed faculty, finances, admissions, examinations, etc. Thus the distinction between the two is clear. Now in the distance mode the technology support with media mix supplements the reading material in print as against total face-to-face teaching in the classroom in a university or a college. Where teacher's role in classroom matters, it is the quality of student support services which is of paramount importance in distance education mode.

Quality is a difficult concept to define even though as an issue it is at the forefront of every educational debate. It means different things to different people. It evokes different questions about standards and relationship among those who teach and those who receive instructions. Nonetheless it is a growing experience linked to reciprocal performance. It is the guiding force behind the success of any programme, system or package. Utility is one feature of quality. Relevance and efficiency are other characteristics. Delivery system and management are other features. Above all this is the comprehensive commitment of the institution to safeguard the interests and reasonable expectations of the students admitted to a programme.

The first attribute of quality is related to learning material in print. Each lesson has to be a 'teacher in print'. Lesson writing today has been brought almost to a point of perfection by numerous institutions all over the world because these have become international educational products on sale. These are now so concentrated and laden with trans-disciplinary facts and global information and features that either these are of greater use to the students of conventional system or they leave the average remotely placed timestarved distance mode learner halfway. In short the students find them beyond their reach and comprehension. This impression is supported partly by the fact of the dropout rate of students which is generally high in case of open universities. The lessons have to be in tune with the level of comprehension of an average student and his background.

Assignments constitute an integral part of the distance education delivery system. It means compulsive application of the students to academic material. The return of the completed assignment to the institutions allow it not only the necessary contact with the students but also the feedback which is so vital for the assessment of the quality and impact of its programmes. In fact, the assignments or the response sheets constitute the core of the entire academic programme. In this exercise different institutions have different formats and methods. While in some institutions the end-of-the-lesson assignment is an exercise in self evaluation by the student, in others its return to the institution followed by its evaluation contributes to the credits to be given to the students. In the latter case it is faculty which has to evaluate the assignments received from the students spread all over the country. Most of the institutions do not have sufficient institutional subject specific core faculty to cope with the seasonal rush of such completed assignments. Some institutions engage poorly paid contractual part-time faculty for this. Many institutions have a notorious record of so engaged evaluators or tutors marking these assignments in a casual manner with casual comments thus defeating the very purpose of their submission. In fact such a casual attitude and indifference cannot be stated to be a student friendly support service. In many cases the sanctity of assignments is lost when they are either delayed in their turnround time or are lost in transit There is an apparent need to strengthen this support service through intra-institutional link up at the national level and need for institutional accreditation based on validity of courses on the basis of evaluation of students assignments linked to their courses. There has to be fresh serious thinking on this very vital constituent of the system

Guidance through face-to-face counselling is an integral part of the student support services particularly with a view to providing accurate information on admission routes, academic programmes and orientation of the newly admitted students. There should be mobile units for students of remote areas. Generally each institution identifies clusters of students and arranges counselling sessions and course related compulsory personal contact programmes for the benefit of students. In terms of convenience and available time slots offered to the students it becomes almost a mandatory requirement for them to attend such programmes which they could otherwise ill afford to attend. The element of compulsion, fixed time attendance, limited availability of tutors, counsellors and teachers and other such attendant constraints, literally negate the very philosophy of the openness of the system. Besides this, the efficacy of such counselling sessions and personal contact programmes in crowded metropolitan cities or in far off places is also in doubt. Their benefits to the students in crowded classes are also marginal particularly when open universities and dual mode institutions do not have their own infrastructure in all the cities. While such programmes aim at the enrichment of learners, without support of adequate library facilities and other such facilities as for replication of reading material and notes, these serve only a limited purpose. In science, vocational, technological and agriculture related courses the problem of numbers and non-availability of expert teachers gets compounded with the lack of availability of corresponding workshops, laboratories, fields, etc. The outcome of the attempt to board-base technical and vocational education with greater scientific inputs remains discouraging. In this direction also the system requires a fresh look through a more intra-institutional cooperative planning and action.

It is relevant to refer to Indira Gandhi National Open University which being a mega institution is at present committed to serve the needs of over 2.5 lac students with 372 courses on the offer. It has a wide network of student support services through 18 regional centres and about 250 study centres with backup support of over 30,000 counsellors As an apex agency for distance education in India it is a resource centre for staff training and research, electronic media production and educational broadcast material It has developed successful methodologies and course material to reach its students through collaborative effort with different ministries, public and non-governmental agencies. It is offering large number of short-term learning modules with modern technologies for ensuring flexible features of open universities and covers wide areas of subject related reading for these working in industry, education, culture, etc. It is time there is more constructive coordination between Indira Gandhi National Open University and other open universities and our dual mode distance education institutions particularly in the field of student support services.

At the threshold of 21st century, as in various developed and developing countries, the success of distance learning system is getting correlated to its commitment to technology particularly the technological support required for the media so important for enchancing its reach to the students. Audio and video services are construed to be the backbone of the system. Teleconferencing, radio paging, satellite communication, group telephone tutorials, etc are the new watchwords for interactive communication. All this is necessary to cope with the population explosion that we face. Technology supported information revolution in itself is an area of abiding promise with vast possibilities. But in India — a country of extensive poverty, social imbalances and scarce resources, higher education is still a luxury and if this is to be brought to the doorsteps of the poor, heavy investments towards enabling them to make use of technological advances will be necessary. Study centres can only partially offer such a facility. So far looking at the enormity of numbers, the spatial spread of study centres is neither adequate nor equitable. Despite the government support being what it is the multimedia production institutions, the AVRCs and EVRCs are busy in producing course related audio and video cassettes for the students of the system in various disciplines. As the time available on the national TV channel is inadequate for proper telecast and viewing of such academic packages as a support device to the students, a dedicated channel is required to be set up, otherwise the present effort will continue to be poor and marginal.

Thus looking to the heterogeneity and requirements of the mass of distance education students all over the country their support services call for national planning, guidelines, preparation of a common platform and their implementation through rearrangement of priorities and identification of places for counselling sessions, study centres and personal contact programmes. All this should be offered with technology assisted inputs in relevant need based programmes which can be conveniently shared and transferred and are learner friendly. These coordinated support efforts when initiated and implemented can alone contribute to the success of the mass-based system of open access and make the students better achievers through home study.

The Tamil Nadu Dr. M.G.R. Medical University, Chennai

Notification for Convocation

The Seventh Convocation of the Tamil Nadu Dr. M.G.R. Medical University will be held during the month of March 1997. The date, time and venue of the convocation will be published in the newspapers separately. All candidates who have qualified for Post Graduate Degrees/Diplomas and Under Graduate Degrees in the examinations of this University held in 1996 and in the case of Under Graduate Degrees where internship is prescribed, those who complete the internship on or before 31.1.1997 are eligible to apply for admission to the Convocation.

Application forms shall be issued from 20.1.1997 at the reception counter of this University.

Requisitions for application forms for admission to the Convocation "In Person" as well as "In Absentia" should be addressed to the Controller of Examinations of the University and sent in a cover superscribed as "REQUISITION FOR ISSUE OF CONVOCATION APPLICATION" alongwith a Demand Draft for Rs. 10/- drawn in favour of the Registrar of the University and a self addressed envelope (24 cm x 10 cm stamped to the value of Rs. 3/-) so as to reach the University before 17.2.1997.

The filled in application for Convocation together with the Convocation fee (if not already paid) should reach the University before 5 p.m. on 24.2.1997.

No. 40, Anna Salai,
Guindy, Chennai-32.
Date : 2.1.1997

Dr. S. Ramaraghavan
REGISTRAR I/C

DRUGS IN SPORTS
Present Scenario

Jawahar Lal Jain*

Drug abuse in sports has become so widespread that it threatens the health, longevity of many athletes while perverting the original intent of sports. Doping is use of methods or taking of various forms of medicines which in an artificial way will increase the physical performance capacity. The star celebrity status for a medal winner at top international meets almost forces the young athletes to fall a prey to get the medal at any cost and by using any method whether legal or illegal, logical or illogical, moral or immoral. They want to reach the magical podium by the shortest possible route. The biggest example has been Ben Johnson, Canada's 100 metre sprinter who won the Gold Medal at Seoul Olympics in 1988 but was later caught for using a banned drug called Stanozolol and banned for 2 years. Later on again he was caught for Testosterone and banned for life from playing. Another startling example in the field of doping has been of Argentine soccer superstar Diego Maradona who was caught for using stimulants. Doping was first started to be tested at Mexico Olympics — 1968. International Olympic Committee (IOC) has banned certain drugs in various categories.

I. Doping Classes

A - Stimulants
B - Narcotics
C - Anabolic Agents
D - Diuretics
E - Peptide glycoprotein hormones & Analogues

II. Doping Methods

A - Blood Doping
B - Pharmacological, chemical & physical manipulation

III. Classes of Drugs Subject to Certain Restrictions

A - Alcohol
B - Marijuana
C - Local Anaesthetics
D - Cortico steroids
E - Beta-Blockers

Among the common stimulants include — Amphetamines — marketed as Dexedrine, Amineptine marketed as Survector, Ephedrine marketed as Corex, Actilex, Tossex improved, etc. Even over the counter commonest anti-cold drug Vicks-Action 500 is banned by I.O.C

Beta-agonists - Orciprenaline, salbutamol (oral preparations), Terbutaline (oral preparation)

These are drugs which increase alertness and reduce fatigue and may increase competitiveness and hostility.

Harmful effects

- Increased heart rate and blood pressure
- Aggressiveness, anxiety and tremor
- Dehydration and decreased circulation

Narcotic Analgesics

Powerful analgesics and are mainly used for management of severe pain.

Harmful effects

- They may increase the pain threshold so that the athlete may fail to recognise injury, thus leading to more serious injury
- Can produce physical & psychological dependence.

Common examples include Dextropropoxyphen - available in India as Ibuproxyvon, Dexovon, Butaproxyvon, Spasmo proxyvon, Parvon, Walagesic, etc. Pentazocine — available as Fortwin, Pentavon, etc.

Anabolic Agents

Commonest examples being :

- Nandrolone — available as Durabolin, Menabol, Deca-durabolin, etc
- Methandienone — available as Hemol
- Methyl Testo sterone — available as Mixogen
- Danazol — available as Danogen, Ladogel, Gynozol, etc
- Norethandrolone — available as Orabolin

Senior Medical Officer, University of Delhi and Secretary General, SAF Games Medical Commission.

- **Stanozolol** — available as Stromba, Menabol, Neurabol
- **Testo sterone** — available as Aquaviron, Sustanon, Nuvir, etc.

Anabolic agents are mainly misused in sports to increase muscle strength, muscle bulk and to promote aggressiveness and as a result increase athletic performance. Anabolic agents are mainly used by weightlifters, powerlifters, body builders, wrestlers, sprinters.

Harmful effects

In Females

- Features like males
- Increased aggressiveness, mood swings, deepening of voice, excessive hair growth on face and body.

In Males

- Acne, increased aggressiveness, mood swings, depression
- Reduction in size of testicles
- Decreased sperm production
- Enlargement of breast, prostate gland
- Premature baldness

Diuretics

They are used in sports for two reasons mainly

a) To reduce weight quickly in sports where weight categories are involved like weight lifting, boxing, judo, wrestling

b) To reduce the concentration of drugs by diluting the urine

Common Examples

- Amiloride — available as Biduret, Dibeta, Frumil, etc
- Frusemide — available as Lasix, Salinex, Lasiride, etc.
- Spironolactone — available as Lactone, Lasilactone
- Triamterene — available as Ditide

Harmful Effects

- May cause dehydration, muscle weakening and cramping
- drop in blood pressure
- cardiac irregularities caused by electrolyte imbalance.

Beta-Blockers

In sports such as shooting or archery, where a steady arm or trigger finger is important, beta blockers might be used to slow the heart rate and steady the nerves. Normally general public uses beta-blockers to lower blood pressure and decrease heart rate.

Common Examples

Atenolol — available in market as Betacard, Atelol, Tenormin, Telol, Atenova, etc.
Metaprolol — available as Betaloc, Metolar, etc.
Propranolol — available as Ciplar Forte, Inderal, Betaspan, etc.

Harmful Effects

Can cause heart-failure, asthma, depression, sleep disorders, sexual dysfunction.

Tests for Beta-blockers are performed at the request of an International Federation, e.g., Archery, Shooting, Biatholon, Modern Pentathlon, Diving, Luge, Ski-jumping, etc.

Any drug should not be taken especially by sportsmen without consulting their team physician. These drugs in the banned list are analysed in the Dope Control Laboratories and the urine sample of athlete is taken. In Asia, there are only 3 labs approved by I.O.C. where drug testing takes place, e.g., Seoul-Korea, Tokyo-Japan, Beijing-China. In India, a Dope Control Laboratory has been set up since 1990 but it is yet to be accredited by I.O.C.

Education of athletes is most important — should be done by team doctors, coaches, medical commissions of National Olympic Committees, sports authorities of different countries.

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
PILANI (RAJASTHAN) 333 031.

FACULTY RECRUITMENT ADVERTISEMENT NO. FR/1/97.

The Institute is looking for suitable candidates who can provide leadership in teaching, research and course development in the areas mentioned below

1. **ELECTRICAL AND ELECTRONICS ENGINEERING** : Microelectronics, Communication Systems, Digital Signal Processing, Artificial Intelligence, Intelligent Systems, Fibre Optic Systems, Power Electronics & Power Systems.
2. **COMPUTER SCIENCE** : Computer Architectures, Operating Systems, Theoretical Computer Science, Computer Networks, Computer Graphics and Vision, Software Engineering.

Academic rank and salary will be communsurate with the qualification and competence of the candidate. Young persons with excellent work to their credit, ability to attract research grants, create R&D cells and build faculty groups around these may be considered directly for senior ranks.

Applications with complete biodata may be sent **within three weeks** from the date of this advertisement to the undersigned.

PILANI **REGISTRAR**
Jan., 1997.

National Health Policy

Prof. J.S. Bajaj, Member, Planning Commission, Government of India, delivered the convocation address at the first Annual Convocation of the University of Health Sciences, Vijayawada. He said, "The major goal of the new policy would be to usher in our fellow citizens a positive change in their health status where health benefits are maximised and health hazards minimised, if not altogether eliminated. The new policy must provide a reliable and relevant framework for not only effecting but also measuring and monitoring the health policy direction during the first quarter of the next century." Excerpts

History is likely to judge the soundness of our health policy planning in the 21st century by one major yardstick: have we succeeded in imparting equity, accessibility, affordability, accountability and quality to health care delivery in India? This is the health Panch Sheel and the people shall be the Panch Parameshwaras to exercise their judgement.

The National Health Policy, which defines the contours and provides the contents of our national commitment for achievement of health objectives, was formulated and adopted in 1983. Since then there have been major changes in disease profile, health care infrastructure and health care seeking behaviour of the population. Several newer tools and technologies for diagnosis and management have become available. These in turn have widened the hiatus between what is being offered by modern science and technology, and what is affordable and available at the level of the individual and the community. Furthermore, the draft of National Education Policy in Health Sciences has been approved in 1983 by the Central Council of Health and Family Welfare; this policy aims at forging the essential inter-linkage between health service delivery and health manpower development. Finally, population growth continues to pose a formidable challenge. Consideration of these and several other emerging issues, such as the nexus between population growth, environment and sustainable development, has become essential.

Therefore a review of National Health Policy is timely and its reappraisal and reformulation imperative. The major goal of the new policy would be to usher in our fellow citizens a positive change in their health status where health benefits are maximised and health hazards minimised, if not altogether eliminated. The new policy must provide a reliable and relevant framework for not only effecting but also measuring and monitoring the health policy direction during the first quarter of the next century.

It is in this context that health policy research must be accepted as an absolute commitment by this University. Within the matrix of budgetary constraints and competing demands for financing variety of health interventions, the Health Universities and other health institutions can provide the scaffolding for developing and validating health practices that are professionally sound, managerially efficient and socially equitable. To do so, the Health University must conceptualise and develop an appropriate model to ensure external and internal efficiency : external efficiency through health systems research aimed at producing the right quantity, quality and blend of health interventions aimed at disease prevention, health promotion and health education, cohesively delivered by the requisite mix of human resources of health who constitute the health care delivery team; and the internal efficiency by managing affiliated medical and health institutions as efficiently as possible.

Financial constraints would essentially require harnessing all available resources, human, material and technological, to achieve the desired level of efficiency within health policy framework. While justifying and endorsing the need for the establishment of Universities of Health Sciences, the Expert committee (on Health Manpower Planning, Production and Management 1986) emphasised the need of an academic and physical environment where all faculties of health sciences can interact together to provide model experience(s) for the future functioning of such health care teams. I visualised then, and elaborated it subsequently, that the complementarity and interdependence of health tasks at the community level demand a model of multiprofessional education as a mode of learning. Such a model would essentially require that the educational objectives and individual

training programmes shall not remain cloistered in the narrow confines of designated health faculties but shall be so coordinated, using problem-based learning as strategy, as to make the realisation of ultimate goal, health for the people, not only possible, but definitely achievable. The congruence of objectives and convergence of services in the community shall generate the desired motivating force of the students and the requisite synergising momentum amongst the educators.

It is being increasingly recognised that health is not just a medical or biological responsibility, but is a social and developmental entity. The model of multiprofessional education would therefore require that students enrolled for education programmes in medicine, dentistry, nursing, nutrition and dietetics along with those enrolled in sociology and psychology must not confine themselves to a vertically compartmentalised vocational curriculum. Indeed, with the strategy of problem-based learning, training modules in the community setting would also require sharing of learning experience with the students pursuing courses in diverse field such as civil engineering, distance education, mass communications, informatics and telematics, amongst others. **With recent concerns regarding Consumer Protection Act, the students from law faculty may be a useful asset as participants in selected modules of multiprofessional education!**

I would also recommend that in this model of multi-professional education students of Ayurveda, Unani, Homoeopathy, Naturopathy and Yoga are also involved along with others to foster a sense of comradeship and mutual respect between different systems of medicine. This can be achieved only here as all such professional institutions are affiliated to a single Health University. The artificial divide between the modern system of medicine and the traditional or Indian systems needs to be progressively demolished so that all traditional systems constitute a unified Faculty of Complementary medicine interacting closely with the conventional Faculty of Mainstream medicine. Finally, multiprofessional education would also assist in demolishing the fossilized caste system in medicine : with its horizontal divisions between medical and nonmedical health scientists and between the practitioners of modern and Indian systems of medicine and the vertical hierarchical stratification wherein the upper crust is the doctor as the supreme being, the nurses rank next, and other allied health professionals such as radiographers and laboratory technicians constitute the lower strata to keep the system functional. Such a prevailing system is manifestly outmoded, outdated, obscurantist and therefore neither viable nor functional to achieve national health objectives. Obviously, therefore, neither the denominational dogma of different systems of medicine nor the sequestered existence of a large number of health care providers can be a part of any model of multiprofessional education and health care in the 21st century.

For the success of such health system(s) it is equally, if not more important, to empower the community so that the people become the subjects of the process and not merely its objects. Such community-based health systems must provide the base and basis of health planning, recognising health and education as the key entry points for harnessing community development efforts. Consequent to the 73rd Constitution Amendment Act, enabling legislations are being enacted by the State Governments to endow the panchayats with power and authority necessary to function as the third tier of local self-governance. Primary health centres and dispensaries are amongst the twenty nine subjects identified in the Eleventh Schedule and would be transferred to Panchayati Raj Institutions. The doctors and the health professionals must imbibe the spirit of new legislation and encourage the Panchayats in participatory management and informed decision making. They must also learn to respond to the new instrumentality which empowers *Panch Parameshwaras* with authority, and therefore demands accountability from the health professionals.

May I suggest that the enlightened Faculty of Health Sciences internalise the emerging dynamics of social mobilisation into our teaching-learning and health care models. As Bertrand Russell said: *There is strength and weakness in those who stand for status quo; the strength that comes of tradition, and the weakness that comes of lack of fresh thought*". He blended this wisdom with another dictum: *For it is not enough to recognise that all our knowledge is, in a greater or lesser degree, uncertain and vague; it is necessary at the same time to learn to act upon the best hypothesis without dogmatically believing it.*" I shall like to add that it is as true of life sciences as of social sciences.

CAMPUS NEWS

Refresher Course in Education

A Refresher Course for college and university teachers in Education was held at the Department of Education, North-Eastern Hill University, Shillong. Sponsored by the UGC, the course was attended by twentyone teachers from the States of Assam, Manipur, Meghalaya, Mizoram, Nagaland and Orissa.

The subject areas covered in the course included (a) Foundation courses — Philosophical, Psychological, Sociological and Economic dimensions; (b) Elective courses — Curriculum Development, Instructional Communication, Models of Teaching, Methods of Instruction and Innovations & Evaluation and Educational Technology; (c) Allied courses — Adult Education and Development, Science and Maths Education, Educational Management, Development of Creativity and Library Skills & Information Technology; and (d) Emerging Areas — Environmental Education, Population Education, Value Education, Language Education and Holistic Health Education including Nature & Yogic Therapy.

Prof. B. Pakem, Vice-Chancellor of NEHU, Shillong was the chief guest at the Valedictory Session. Prof. K.K. Sharma, Course Coordinator, in his report, highlighted different aspects of the discipline. He pointed out the special needs of teachers of North East Region with regard to updating their knowledge and development of professional skills for effective teaching and research in higher education. He was of the opinion that the quality of collegiate teaching could be improved through a process of continuous interaction and periodic training.

The participants expressed their satisfaction for being exposed to new areas of study. They also suggested some measures to further improve the quality of the ensuing courses to be held at the university.

Prof. B. Pakem, in his valedictory address, appreciated the efforts for introducing non-traditional areas of study having social relevance and thus meeting the needs of the region. He pointed out that the participants should draw maximum benefit from such courses and thereby improve teaching in their institutions. Prof. Pakem said that the career of future generation would depend upon the academic and professional competency of teachers in higher education. Therefore, teachers needed to develop habits of continuous learning in their respective fields of study and expose themselves to new frontiers of knowledge.

Prof. (Mrs.) K.S. Lyngdoh, in her presidential remarks, highlighted the role of UGC in raising general standards of higher education by establishing Academic Staff Colleges and holding Refresher Courses in universities.

Educational Video Awards

Prof. M.M. Chaudhari, Director of the Consortium for Educational Communication, said that eleven programmes had qualified for the ninth UGC-CEC educational video competition awards. This year, he said, 23 awards were offered and the competition was thrown open to all the producers in the country, but only 106 entries were received.

Of these awards, three carry a cash prize of Rs. 25,000 each. They are for best programme for children, best programme for teachers' training and best programme on non-formal education.

Prof. Chaudhari said the programme "Estimating Predator and Prey Populations" produced by Audio Visual Research Centre, Mysore was adjudged the best in the children's category while in the other two prize money categories, no programme was found suitable.

Besides the awards, commendation certificates were given to six programmes, including "Jiyo Aur Jeene Do" produced by Educational Media Research Centr, Jodhpur, in the children's category.

In the best programme of the year category, no programme was found suitable for award. However, citation was awarded to "Symphony in Green" produced by EMRC, Pune, and "Antar Jyotir Bahir Jyotir" produced by EMRC, Calcutta.

In the best series of the year, no programme was found suitable.

Best programme in social sciences was "Talash-I" produced by MCRC, Delhi.

In the best programme in science, mathematics and technology category, no programme was found suitable for award. However, citation was awarded to "Neem - The Green Goldmine" produced by EMRC, Jodhpur and "Bubbles and Their Physics" produced by EMRC, Calcutta.

In best programme in humanities, literature and communication category, no programme was found suitable.

In the best programme in fine arts, sports, health and culture category, no programme was found suitable. But citation was awarded to "The Art of Khatamband" produced by AVRC, Srinagar and "Adhunik Kabbadi-II" produced by AVRC, Indore.

In the best research publication on the use of electronic media for education category, no entry was found suitable.

In the individual technical excellence category, "Symphony in Green" produced by EMRC, Pune, was awarded for camera work and for sound. Editing award was jointly shared by "Reflection . Geometrical Transformation-III" produced by EMRC, Calcutta and "Coleridge's Lament" produced by AVRC, Osmania, while the graphics/animation/special effects award went to "Bubbles and Their Physics" produced by EMRC, Calcutta.

"Estimating Predator and Prey Populations" produced by AVRC, Mysore was awarded for the best script while in the formative research and presentation/anchor person categories, no programme was found suitable.

Training Courses for Engineers

The Hi-Tech Vocational Training Centre, an Indo-Italian Project under the aegis of Govt. of N.C.T. Delhi, runs different training courses for engineers of Mechanical, Production, Electrical and Electronics branches working at various levels in the industries and also fresh passouts from academic institutions. The courses are practical in nature and are conducted on machines used in industries. The theoretical aspects are covered in academic atmosphere using audio-visual aids.

The courses which are to start from February include : (i) Programmable Logic Controllers (2 Modules of 1 week each), (ii) Programmable Logic Controllers (2 Modules of 2 weeks each(; (iii) Microprocessor & its Application; (iv) Control Instrumentation; (v) Motor Drives & Controls; (vi) Computer based Measurements; (vii) Digital Systems; (viii) Electronics Maintenance Engineering; (ix) Electrical Control Circuits; (x) Programming & Operation of CNC Machines, (xi) Automation with Pneumatics & Hydraulics; and (xii) Metrology & Engg. Inspection.

Further details may be obtained from Mr. M.P.S. Murthy, Asstt. Manager (Training), Hi-Tech Vocational Training Centre, Okhla Industrial Area, Phase-II, New Delhi-110 020.

Research Fellowship on Parliamentary Institutions

The first research fellowship for 1996, instituted by the Lok Sabha Secretariat on parliamentary institutions, is reported to have been awarded to Dr. S. Nagalakshmi, a professor of the Avinashilingam Deemed-University, Coimbatore, for her research project in Hindi titled "Communication between Parliament and the people".

The fellowship of Rs. 1.5 lakhs will be granted every year for conducting study in Hindi and English on parliamentary institutions, including state legislatures, their evolution and development, their rules, procedures and modern techniques of servicing Parliament.

Workshop on Restructuring Public Enterprises

The Indira Gandhi School of Management of the Pondicherry University proposes to organise a workshop on Restructuring of Public Enterprises at State Level during 13-15 March 1997. The Workshop is intended for the executives, academicians, policy & implementation personnel, and others connected with the Public Enterprises on Restructuring. The United Nations Development Programme (UNDP) would extend technical assistance through its Interregional Network on Privatisation.

The objective of the Workshop is to provide inputs to the targeted group to enable them to generate an approach to initiate plans of action to restructure State Level Public Enterprises (SLPEs).

The sessions will cover turnaround strategies, managerial and organizational restructuring, case studies and also restructuring for profitable public enterprises to enable them to be proactive in a highly competitive global economy. The participants will gain insights which will help them develop appropriate plans of action.

Further details may be obtained from Dr. R. Prabhakara Raya, School of Management, Pondicherry University, Pondicherry-605 014.

Doctorate for Dr. Jain

Dr. Jawahar Lal Jain, Senior Medical Officer, World University Service Health Centre, University of Delhi, and a noted sports physician, was recently honoured with Doctor of Science (*Honoris Causa*) by the Open International University, Colombo, Sri Lanka, for his contribution to the world of sports medicine in India and the Asian continent. The degree was awarded at the World Congress of Sports Medicine held on 27 December 1996 at Colombo. Dr. Jain also presented a paper on 'Drugs in Sports — Present Scenario'.

Dr. Jain was the official doctor of Indian contingent at Barcelona Olympics-92, Commonwealth Games, Victoria, Canada 1994, SAF Games, Madras 1995. He is the Secretary General of SAF countries Medical Commission and member, Medical Commission, Indian Olympic Association.

Inter-Varsity Youth Camp

The Seventh All India Inter-University Youth Camp organised by Foundation for Amity and National Solidarity, in collaboration with Punjabi University, was recently held at Patiala.

Inaugurating the camp Jathedar Jiwan Singh Umranangal exhorted the participants to travel the path of truth and study hard to become good human beings and citizens. Dr. J.S. Puar, Vice-Chancellor of the University, welcomed the participants and asked them to be friendly to each other.

The participants were divided into five different groups and the topics for discussion were (i) Education and National Integration; and (ii) Cultural Plurality.

The competitive events that were organised as part of the camp included : (i) Group Folk Song; (ii) Group Folk Dance; (iii) National Group Song Competition; and (iv) Declamation Contest. Prizes were also awarded to the winning teams.

A total of 277 participants, representing 26 Universities including 166 boys, 86 girls and 25 teacher-incharge of the teams participated in the Camp.

Teacher Empowerment and School Effectiveness

The National Council of Educational Research and Training (NCERT) proposes to organise an International Seminar on Researches in Teacher Empowerment and School Effectiveness at the Primary Stage on July 23-25, 1997 in New Delhi.

The sub-themes proposed to be discussed include : Conceptual issues; Pedagogical issues; Motivational issues; School climate and Interpersonal relations; School community partnerships; Policy and Management issues; and Case Studies in Teacher Empowerment and School Effectiveness.

This is the third in the series of International Seminars on School Effectiveness. The first International Seminar on School Effectiveness and Learning Achievement at Primary Stage was organised in July 1995. This was followed by the second International Seminar on School Effectiveness and Classroom Processes at the Primary Stage held from July 24-26, 1996. The aim of both these seminars was to share research and studies conducted at Primary School Stage under different socio-cultural contexts in India and abroad in order to understand the functioning of variables related to learning achievement and classroom processes and their contribution to school effectiveness.

Further details about the third seminar may be obtained from Dr. Ved Prakash, Prof. & Head, DPEPCRG, N.C.E.R.T., Sri Aurobindo Marg, New Delhi-110 016.

News from Agricultural Universities

Strategies for Livestock Development

A National Seminar on "Strategies for Livestock Development in NE Region" was recently held under the aegis of Assam Agricultural University Teachers' Association (Veterinary Faculty) in collaboration with Indian Veterinary Association (Assam Branch).

Inaugurating the seminar Dr. Raghvansh Prasad Singh, Union Minister of State for Animal Husbandry and Dairying, exhorted the veterinary scientists to dedicate themselves to the task of alleviation of rural economy. He elaborated at length the animal husbandry resources and emphasized proper harnessing of these resources. He disclosed that with a budgetary provision of about 0.2 per cent, the animal husbandry sector contributed 9 per cent to the national exchequer. This was in addition to the huge savings on foreign exchange, he added.

The Union Minister observed with concern that the AH & Dairying sector was sidelined so far by the agricultural sector, since both the sectors were clubbed together at the National level. Poor fund allocation (about 10 per cent only) by the Indian Council of Agricultural Research had seriously impeded the growth of the research and development of the Animal Husbandry and Veterinary sector.

He proposed the formation of Indian Council of Veterinary Research with support from a sizeable number of Members of Parliament. In this context, he also requested the Government of Assam to take the initiative to formulate act and ordinance towards the establishment of a Veterinary University in Assam.

Dr. Singh urged the veterinary scientists to evolve the techniques suitable for the region and take technologies to the doorsteps of the farmers.

A keynote address by Dr. C.K. Rao, a doyen of veterinary and animal husbandry in India, was read out. Dr. Rao termed the Animal Husbandry in India as a sleeping giant and hence, India had no business to be poor. It was *only a self-inflicted poverty arising* out of total neglect of its enviable livestock wealth, he opined.

Sri S.N. Medhi, Minister, AH & Veterinary, Assam, emphasised effective and strong coordination between Dept. of AH and Veterinary Sciences and Faculty & Veterinary Science for improving the productivity of otherwise low productive livestock resources of the State. He also advocated the establishment of a Veterinary University in Assam.

He also disclosed that steps were being initiated to create more avenues of employment of unemployed veterinary graduates in AH & Veterinary Department *and other linked departments*. Dr. A.R. Baruah, Vice-Chancellor, AAU, elaborated the teaching, research and extension activities of the Veterinary Faculty of the AAU.

Sri Hiranya Konwar, Minister of State for Veterinary, appreciated the efforts of teachers of Veterinary Faculty of AAU and Indian Veterinary Association (Assam Branch) for organising a seminar and assured support of the Government in the effective functioning of the scientists, engaged in the uplifting the rural economy by harnessing livestock resources.

Dr. A.K. Sarma, MP and a teacher of Veterinary Faculty, AAU, stressed that the procedures involved in providing financial and technical assistance to the unemployed entrepreneurs should be simplified.

A technical session was inaugurated by the Agriculture Minister Sri Chandra Mohan Patowary. In his address, Sri Patowary pointed out the difficulties faced by the farmers of Assam as well as other states of NE Region. He also explained the indispensable relationship between agriculture and animal husbandry. He appealed to the veterinary scientists to take into consideration the needs of the poor farmers to uplift their economic status during the deliberation of the technical session. Status paper on strategies for Livestock Development in various states of NE Region were presented by the Directors of the AH & Veterinary Departments.

In addition several scientific papers were read out in the session. During deliberations, several effective recommendations *were made for formulating strategies* for livestock development in the region.

Dr. G.N. Dutta, President AAUTA (VF), recalled the sacrifices and the dedication of veterinary professionals to raise the veterinary profession to the present status. He exhorted all to apply knowledge with conscience to ameliorate the protein-hunger of the community.

News from AICTE

Networking Engineering Colleges

The All-India Council for Technical Education (AICTE) is reported to have decided to link the engineering colleges of the country in NICNET and Internet through World Wide Web (WWW) with a view to providing access to students on the latest technologies available in the field of engineering and management. To start with, about 150 engineering colleges would be inter-linked within a month, which would be extended to other colleges soon. This was revealed by Prof. S. Rame Gowda, chairman of the council, while inaugurating a national seminar on "Engineering Education for the 21st Century", organised by the Indian National Academy of Engineering in Chennai recently.

The Chairman said due to paucity of funds many engineering colleges were not able to subscribe to foreign journals which were essential to keep abreast of latest technologies. The council, with a view to providing latest technological information to students as well as faculty, had decided to make use of the WWW facility.

Another problem addressing the engineering education in the country was the lack of qualified personnel, especially in the field of higher education. A long-term solution to the problem would be to increase the intake of students in postgraduate centres, which had a good academic record. But to meet the immediate demand, Prof. Gowda said, the council had planned to make use of video conferencing technique with the help of VSAT. The video conferencing would provide a virtual classroom atmosphere to students in various regions, which would help them interact with teachers. The technique would expose the students to excellent materials available in the field.

Referring to the needs of the engineering education in the next century, Prof. Gowda said as the technology was changing at an unbelievable pace, it was necessary to frame a syllabus which would effectively prepare the students to meet challenges. It should be relevant, timely and flexible to adapt to continuing changes in the engineering education. It should expose students to problems in various fields not confining to engineering alone.

One of the lacunae of the present system of the education was its failure to instil self-confidence and self-sustaining entrepreneurial skill among the students. With the present globalisation and liberalisation, the students should be well-versed in marketing skill and for this, Mr. Gowda stressed the need for including the management science in the syllabus.

Prof. R. Natarajan, Director, Indian Institute of Technology, Chennai, who presided, said the engineering education had undergone a significant change in the recent past and in the absence of proper planning it would be difficult to keep pace with the changes. "Engineers of the future should have initiative and flair for innovation, strong grasp of fundamentals, good communication skills, inquisitiveness, desire for continued and life-long learning and ability to respond and adapt to changes".

News from Abroad

Digital Image Processing Workshop

The GIS Application Centre (GAC) of the Asian Institute of Technology, Bangkok, proposes to organise a Digital Image Processing Workshop on 1-5 April, 1997. The workshop is designed to introduce participants to the fundamentals of Remote Sensing (Optical and Infrared), introduction to Satellite Data (digital images), digital image processing and a set of applications in various aspects of natural resources. Image processing and analysis will be highlighted through actual computer hands-on sessions.

The objectives of the workshop are (i) to provide theoretical knowledge of Remote Sensing; (ii) to familiarize with the characteristics of digital data, data storage, downloading to computer, data processing through intensive hands on session; and (iii) to understand the application of Remote Sensing Data in various fields.

The course contents include (a) Concept and Fundamentals of Remote Sensing — Energy sources and radiation, Electromagnetic spectrum, Reflection, absorption and transmission, and Spectral reflectance of vegetation, soil and water; (b) Major Satellite Systems — LANDSAT, SPOT, AVHRR; (c) Image Data and its Characteristics — Pixel element, Resolution — Spatial, Spectral, Radiometric and Temporal Resolution; (d) Storage of Image Data — Different Media of Storage, Different Format of Data Storage, (e) Acquiring of Images — Downloading Image Data into Computer Hard Disk, (f) Lab — Reading different satellite images — LANDSAT Image in Single Band, True Color Composite, False Color Composite (FCC), SPOT image in Single band and FCC, Tracing out Different Points in Images, (g) Digital Image Processing — Image Correction — Radiometric Correction, Atmospheric Correction, Geometric Correction — Map to image and Image to Image correction, and Coordinate Transformation; (h) Image Conversion — Image Enhancement and Feature Extraction — Gray Scale Conversion, Histogram Conversion, Color Display and Image Data, and Color Representation — Color Mixing System; (i) Lab — Image Correction and Conversion (observing interpretability); (j) Digital Image Classification; (k) Unsupervised Classification — Clustering, Principle Component Analysis, and Segmentation; (l) Supervised Classification — Statistical method (Maximum Likelihood), Decision Tree; (m) Lab — Digital Image Classification; (n) Application of Satellite Remote Sensing in Landcover

Classification, Landcover Change Detection, and Global Vegetation Map.

Further details may be obtained from Mr. Shanker Raj Pathak, Manager & Program Specialists I, GIS Application Centre (GAC), STAR Program, SERD, AIT, G.P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand.

News from UGC

Countrywide Classroom Programme

Between 8th and 14th February, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

8.2.97

"Puzzles and Paradoxes in Statistics"

"Beyond Green Pastures-I : A World of Rural Non-farm Sector"

"Traffic Scenario. Problems and Remedies"

9.2.97

"Theatre Architecture - V.
Modern Sanskrit Theatre
Phase I & II"

"Sun and Salt"

11.2.97

"New Horizons"

"Delhi : The Indomitable City"

13.2.97

"Wild Memories-I"

"Was all the Training in Vain? When Muscle Fatigue Sets in"

"Aravalli Supergroup : The Proterozoic Rock"

IInd Transmission

1.00 p.m. to 2.00 p.m.

8.2.97

"Understanding Cinema-III : View Point"

"Family Series : Portraits of Genesia - I"

"Communication Skills for Employment"

9.2.97

No Telecast

10.2.97

"Lace Makers of Andhra Pradesh"

"Classical Mechanics-X : Conservation of Energy and Momentum"

"Through Business Communication"

11.2.97

"Integral Pedagogy Process - II : Context"

"Meteo : Calculating the Unpredictable"

"Never Say Die"

12.2.97

"E-Mail"

"Hibiscus Rosa Sinensis"

"Caloric Restriction"

13.2.97

"New Horizons"

"Literature in Society Renaissance-I : Myth and Reality"

14.2.97

"Concretising Algebra-II"

"Human Rights and Indian Constitution-II"

"Developing Interpersonal Relationship through Communication-I"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

10.2.97

"राग संगीत - IV : भैरवी"

12.2.97

"महाबली पुरम के वास्तुशिल्पीय आश्चर्य"

"मेरी प्रथम पाठशाला : परिवार"

14.2.97

"काला धन : कैंसर अर्थव्यवस्था के लिये"

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
March 13-15, 1997	Restructuring of Public Enterprises at State Level	To provide an approach to initiate plans of action to restructure State Level Public Enterprises [SLPEs].	School of Management, Pondicherry University, Pondicherry	Dr. R. Prabhakara Raya, Workshop Coordinator, School of Management, Pondicherry University, Pondicherry-605 014
July 23-25, 1997	International Seminar on Researches in Teacher Empowerment and School Effectiveness at the Primary Stage	Theme Teacher Empowerment and School Effectiveness	National Council of Educational Research and Training, New Delhi	Dr. Ved Prakash Prof & Head, DPEPCRG, NCERT, Sri Aurobindo Marg, New Delhi-110 016

BOOK REVIEW

Noble Endeavour Towards Self Reformation

S. Biswal*

Mahatma Devesh Bhikshu. Hints for Self Culture. New Delhi, Shri Sultan Chand Trust, 1996. Pp. 366. Rs. 50.00.

The book *Hints for Self Culture* is an anthology of 366 noble thoughts, gleaned from the Vedas, arranged in the form of a perpetual diary. The work performed by Mahatma Devesh Bhikshu in compiling all these valuable Vedic sayings is really a sacred one. The author has presented such noble ideas for the benefit of human race and specifically for our constant guidance and inspiration. The best thoughts selected have been elaborated by the author with meaningful words relevant to the contemporary context. Consequently, the text has become a helping hand for the masses searching for cultivating self culture in order to attain eternal peace through internal purification and awakening.

Adhering to the ideas of both oriented and western philosophers, Mahatma Devesh Bhikshu has given stress on our mind. One's mind is one's greatest friend. But it can also be the worst enemy if not controlled. An effective way to control the mind is to keep directing it regularly and to keep it in constant touch with positive and lofty thoughts. These thoughts, in the opinion of the author, can act like a mental tonic and rejuvenate and strengthen the mind and the will. Moreover, if such thoughts be integrated with one's life style, one can feel illumination and awakening. This, on the other hand, enables one to enjoy a happy and successful life being freed from the bondage of ignorance (darkness).

At the very outset, the author has given importance to proper education, learning, knowledge and understanding. Since, life is nothing but work, action must be in right direction from the very start of the day. It is only after proper education, learning, knowledge and requisite training that one is able to perform one's duties properly. God has endowed man with three special gifts, namely, power of intellect, power of speech and power of doing work. Man must first reform himself before trying to reform the world. For such personal purification, one needs proper education. Without education, a man is only a beast. Through proper learning, one must build up an exemplary character. Blessed is the mother who, from the time of pregnancy up to the time of completion of education, is always instructing her children to be persons of excellent character. As the saying goes, "Charity begins at home".

Education serves as a guide in life. Through right education, one can awake oneself to live life deliberately and consciously. Education can make a way for the development of our physical, mental and intellectual faculties to the maximum to change the world into heaven. True education makes a person humble and polite. It gives self-confidence and strength. A man of learning is respected everywhere. According to the quotation in Sanskrit, "A king is worshipped in his Kingdom only; whilst a learned person is worshipped throughout the world." Truly blessed is he who goes on acquiring more and more knowledge, enjoying life and picking up pearls of wisdom, not for himself but for sharing them all with others, since he has actually understood the purpose of human life. Knowledge without action has no value. One should mind it that action is life, inaction is death. True education, being harmonious blending of intellect, body and soul, builds strong character, we may embark the boat of education to cross this ocean of the world. Above all, the aim of education is to make one noble

Veda has given stress on controlling our sense-organs through control of mind. Brahmacharya, the elixir of life, is the key to success. One should practise Brahmcharya to remain active with all odds. Good health and healthy mind is necessary for hard work. Physical exercise is essential for maintaining good health and will

Truthfulness is another virtue to attain God. As per an apt quotation, "God is truth and truth is God". Only the devotees of truth are able to drink the nectar of eternal bliss. There are many examples of such virtuous people in our history. Satyawadi Raja Harish Chandra, Ramchandraji Maharaj, Dharmaraj Yudhishthira, Maharishi Dayananda Saraswati, and recently Mahatma Gandhi, all lived for truth and died for truth. There is no virtue higher than truth. This earth is

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Nayagarh College, Nayagarh-752069.

stable because of truth. Those who adopt truth in their thought, word and deed are verily great souls. The foundation of this world is truth.

Man is considered to be the crown of God's creation due to his intellect. Mahatma Devesh Bhikshu has classified the people of this world into three categories, viz. (1) Learned and virtuous people are known as God; (2) People who are industrious and work honestly and sincerely with some weaknesses of man are known as human beings; and (3) Those who are immoral and commit crime and sins for material gains are known as devils. Similarly, there are three main powers, namely, power of knowledge, power of physical strength and power of wealth. All the three are essential to carry on our work smoothly in this world. With power of knowledge, man can achieve greatness. Real knowledge makes the perception of divinity possible.

Speaking of beauty, Rgveda says that the pretty damsel dawn displays her beauty again and again. The beauty of dawn is irresistible. As is said, "Beauty lies in the eyes of the beholder". The beauty of Nature can only be enjoyed if one can awaken oneself to have that charming imagination. Even the poetic vision of dawn cannot be felt by all. Real beauty is the bounty of the soul.

Since the knowledge of spiritual subjects gives us a deeper insight to understand the problems of our life, the author has laid importance on the study of the Vedas, which enables us to unravel the mysteries of various complex problems of the world. For eternal knowledge, we should read the Vedas. God realisation is only possible through Vedic path. If we want to lift ourselves morally and spiritually, we must expose ourselves to these two fires:

1. the fire of hard work and struggle; and
2. the fire of self-discipline and repentance.

The self can be purified through suffering and penance. Only he who struggles can win. One should keep oneself awake for long life and prosperity. Humanity and courtesy lead one to divinity. Patience and perseverance lead to success. One must intensify one's desire to achieve perfection. This requires cultivation of divine qualities as best as possible.

The author has also collected Vedic lines focus on the sattvik food. Life can be made enjoyable with Vedic lore and sattvik food. We become what we consume. The food that we eat is of organic importance, for our thoughts are shaped by our food. If we eat stale, over-spiced and fried, it leads to negative thought waves. On the contrary, if we consume a predominantly sattvik food—rich in milk, butter, fruits, vegetables, it produces positive thoughts.

Sacrifice is another spirit of good life. One can achieve every thing if one has the spirit of unselfishness and sacrifice. Every work should be done for the good of others. Happiness comes through sacrifice. Selfishness, on the other hand, obstructs the vision of truth. Service to others should be done without any motive. Selfless love is source of peace and bliss. Real greatness lies in selfless service of humanity. Many of our ancestors gave up their all in the service of the country, fighting for its independence. We expect now similar thoughts and deeds of every citizen in order to strengthen our country's unity, integrity, safety and security. Sacrifice never goes in vain. He who serves the people with all his wealth, power and knowledge, becomes an uncrowned king. One must be fearless in performing his sacred duty. None can be great unless he has conquered fear. Fearlessness springs from spiritual power. Duty well-done is a shield against fear. One should learn to fight life's battle bravely and manfully.

The author has also stressed upon time-keeping. Because, time is ticking fast in life. Utilising time efficiently gives success. One should not waste a moment in vain. Timely doing every work elevates one's personality and morality.

As is told, "the mother is the first temple of education"; so also is opined by Yajurveda. A prosperous civilization is developed by the influence of good women. Women, with gentle nature, may bear good children. Our mothers may be learned and of excellent character and conduct, so that the children may be noble and virtuous, as the first school of child is his home. Good nations are made by good mothers, who are able to lay the seeds of good habits in the hearts and minds of their children. Every human being receives his moral training in the family in which he is born. That is why Vedic scriptures have laid great emphasis on the education of our womenfolk.

On the whole, the congregation of the noble thoughts in a small handy book 'Hints for Self Culture' is really a distinguished work in the field of spirituality and Vedic studies. The author's attempt to awaken the masses to have true and proper education, learning, knowledge and training is indeed a pioneer one. The explanation of the vedic lores with the presentation of the facts related to the contemporary world is lucid and easily understandable. The present-day society needs such type of excellent works on self reformation of individuals in order to make oneself free from the forces of ignorance (darkness).

A Comprehensive Guide

Dorothy Isaac*

Joseph Gibaldi. MLA Handbook for Writers of Research Papers. 4th ed. New Delhi, Affiliated East-West Press, 1995. Pp. xviii+293. Rs. 99.00

The MLA Handbook for Writers of Research Papers is useful to the community of writers who have great value for scholarship and careful documentation. It is equally useful to the research scholar. It provides a comprehensive picture of how research papers are prepared. The book is an excellent reference tool, which can be used independently by students and researchers.

The style recommended by the Modern Language Association of America for scholarly writing and research papers by students has been adopted by journals, university presses, college departments and individual researchers and research guides for more than half a century. The style sheet of the MLA was published as "MLA Handbook for Writers of Research Papers" in 1977. The second edition (1984) introduced the current simplified set of rules for documentation in which citations could be placed in the text within parentheses. The third edition (1988) covered some aspects of electronic publication. The present edition includes recent technological developments such as CD-ROMs, Networks, E-Mail Communication etc and their adoption in scholarly research.

The book is divided into five chapters having sections and subsections. Chapter 1 deals with some of the educational and intellectual purposes of research and describes the preliminary steps in a scholarly project such as choosing a topic, using a library, producing a working bibliography, notes, outlines and drafts. It also deals with avoiding plagiarism. Chapter 2 deals with the mechanics of writing. It gives practical advice on such matters as spelling, punctuation, and the presentation of names, numbers, titles of works, and quotations. This chapter is helpful for craft writing which should be clear, consistent and stylistically authoritative. Chapter 3 gives guidelines on the physical format of the paper. The next two chapters cover the MLA's system, or style, and sources of documentation. Chapter 4 explains the listing of sources and arrangement of entries at the end of a paper. It gives citation of books, articles in periodicals, CD-ROM's and other portable databases, online databases and citing of other sources illustrated by examples. Chapter 5 shows how to cite them in the text of a paper by acknowledgement of sources, words, facts or ideas. Sample references offer recommendations for documenting many other kinds of references. Chapter 6 describes abbreviations that are useful in documentation and in certain other contexts such as time, geographical, and publisher's names and titles of literary and religious works. Also are suggested symbols and abbreviations useful in proof reading and correction. Two Appendices A and B follow the chapters. Appendix A lists notable reference works in specialized fields; and Appendix B presents some systems of documentation other than the MLA's. Finally sample pages of a research paper that illustrate MLA style are given. This is followed by an alphabetical Index.

Being a completely revised and expanded edition, it is a comprehensive guide for preparing research papers. It provides detailed information on using computer technology in preparing research papers, standards for mechanics of writing, a section on documenting non-print sources and also on citing electronic publications. It is designed to serve as a supplementary text.

The book describes the use of electronic catalogs, central information systems and CD-ROM and on-line databases. In explains how to use computers to compile bibliographies, take notes and outline while writing research papers. Also are given suggestions about citing electronic publications including CD-ROMs, diskettes, magnetic tapes and on-line databases. The fourth edition also gives an expanded section on punctuation. The book outlines the documentation style which will be useful for a substantial majority of scholarly journals in languages and literature. It will help the community of writers who are sure to influence the development of new rules.

The author Joseph Gibaldi, being the director of book acquisitions and development of the Modern Language Association has done a good revision of the earlier edition.

The book is well printed and is free from printing errors. On the whole, the book is well written. The author must be congratulated for bringing out a book which would be useful for the researchers and writers. He deserves all praise for bringing out such a useful and scholarly publication.

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*University Librarian Osmania University Library, Hyderabad-500 007.

Excellence in Librarianship

With the knowledge and information explosion and the advent of television, computer and internet working, the role of librarians and libraries is changing rapidly and is becoming more challenging. The student of tomorrow are going to depend more and more on library and information services. The user of library, especially in an educational institution, is not merely students. Teachers too need to use library to keep themselves updated. In the developed countries of Europe and USA, a silent revolution is taking place in the educational sector, what is known as "beyond teaching", and "beyond learning". Greater emphasis is now being *laid on the learning process in which even teachers are included*. This trend has already made its appearance in India, and if it has not it has to arrive sooner than later at all levels of education. The evolutionary educational process therefore needs the services of library centres rather than merely traditional libraries and conventional librarians. In other words, the role of librarians has to undergo radical changes in the coming few decades extending into "total quality librarians". The need has assumed greater significance in the context of economic reforms going on in the country.

Whereas modern techniques of computer and mass communication will form the tools, the librarians will have to orient themselves to be able to respond to the user needs. This calls for "excellence" in library services and "excellence" in librarians. The basis of any excellence is not in the machine but in the human skill. It is generally believed that anyone can become a librarian if he or she has the necessary educational qualification and can get admission in the library science course. With supervision, guidance, and experience, librarians can attain proficiency in their work function. However, in order to achieve "excellence", deliberate efforts are to be made to inculcate "skills" in the librarians not merely in the technology of library science, but in human skills that will make him or her responsive, efficient, effective, and useful to the user of the library. Our experience has shown that given an opportunity and the environment, it is possible to incorporate necessary "skills" in the library personnel at all stages of their career, especially in the initial stages.

We have developed a "skills" development programme for librarians, the basic modules of which are : attitudinal skills (possibility thinking or positive thinking), communication skills (speaking, writing, reading, and listening with greater emphasis on speaking skills and listening skills), and understanding self-understanding others. Basics of these skills have been imparted through lectures, demonstrations, games, and participative training styles. Such programmes are designed as Introductory (one day) or Comprehensive (one to fifteen days) depending upon the needs of the host institutions. Our approach has been to imbibe and inculcate traits of leadership amongst librarians so that they can ultimately achieve excellence. Any training programme is always the beginning of a learning process and it is only continued sincere and honest practice that will make "total quality people".

Bharat R. Sant
Hon. Chairman,
Management and Resource
Development Foundation
(MRDF), Hyderabad;
C-14/2 K.K. Nagar,
Habsiguda,
Hyderabad-500 007.

Economizing on Answer Books

This is in response to B.K. Sen's paper "Economizing on the Answer Books" (*University News* of December 9, 1996). I fully agree with Sen's view and the novel idea. All educational institutions should follow this process. Few ruled loose sheets of A 4 size, say 4 or 5, may be given initially along with a folder on which all the information of the examination as well as examinee should be written by the examinee himself. Other necessary particulars required by the institution may be printed on it. Extra loose sheets should be provided by the invigilators after personal inspection. Each loose sheet should have the emblem of the institution printed on it along with the instruction to candidates. Each folder and the loose sheets should be punched at the left-top corner through which tags could be used for tying the loose sheets. Details may be worked out according to suitability of the institutions. The ruled loose sheets surely economize the expenses. For Maths and like subjects the loose sheets may be plain.

To my view this process may be adopted by the educational institutions forthwith.

N.C. Paul,
Principal,
Sukanta Mahavidyalaya,
Dhupguri-735210

NATIONAL CENTRE FOR CELL SCIENCE, PUNE

(An autonomous Institution of the Department of Biotechnology, Government of India)

REQUIRES SCIENTISTS

Advt.No.1/1997

NCCS is devoted to research and development in modern Biology and Biotechnology. The Centre is looking for outstanding Scientists in areas of cell-cell communication, signal transduction, cell proliferation, differentiation, molecular genetics, protein chemistry and folding, cellular and molecular immunology, membrane dynamics etc. Candidates should have published work of high quality. Applications are invited from Indian citizens for various scientific positions as under :

Sr. No.	Position	Scale of pay (TE at minimum Rs.)	Upper age limit (years)	Qualifications and Experience
1	Scientist 'F'	5100-6300 (13,389/-)	50	Proven leadership and high quality research work as evidenced by publications/patents with EITHER 11 years post PhD experience OR Ist class M.Tech./MD/MVSc/ M.Pharma with 12 years experience
2	Scientist 'E'	4500-5700 (12,165/-)	50	Proven leadership and high quality research work as evidenced by publications/patents with EITHER 8 years post PhD experience OR Ist class M.Tech./MD/MVSc/ M.Pharma with 9 years experience
3	Scientist 'D'	3700-5000 (11,005/-)	45	Proven leadership and high quality research work as evidenced by publications/patents with EITHER 5 years post PhD experience OR Ist class M.Tech./MD/MVSc/ M.Pharma with 6 years experience
4	Scientist 'C'	3000-4500 (9,170/-)	35	Ph.D in science with high quality research work as evidenced by publications/patents and 2 years post PhD research experience in relevant field OR Ist class M.Tech./MD/ MVSc/M.Pharma with 3 years relevant research experience
5	Scientist C (Animal House)	3000-4500 (9,170/-)	35	Ist class MVSc with 4 years experience of breeding, care, nutrition, maintenance, quality control and health monitoring of laboratory animals
6.	Scientist 'C' (Science Communication Officer)	3000-4500 (9,170/-)	35	Masters degree in science with a strong command over English language and demonstrated ability for science writing/reporting and at least four years experience in report writing, liaison, negotiations, co-ordination, collection of technical information, technology management, planning, writing, monitoring and evaluation of projects, patent drafting and filing etc. Desirable . Diploma/Degree in Management/Communication

Prescribed Application forms can be obtained before **28th February, 1997** from the Controller of Administration, National Centre for Cell Science, Ganeshkhind, Pune - 411 007, by sending a self addressed envelop of size 23X10 cms affixing Rs 3/- postage stamp.

Applications completed in all respects alongwith attested copies of certificates, degrees, testimonials together with a crossed Indian Postal Order/Demand Draft for Rs.10/- (candidates belonging to SC/ST communities are exempted from the payment of application fee) payable to the Director, NCCS, Pune, should reach to the Director, , National Centre for Cell Science, Ganeshkhind, Pune - 411 007, not later than **20th March, 1997**. Applications received after the due date or without the required copies of certificates etc. and application fee will not be entertained.

Note

1. Mere fulfilling the minimum prescribed qualifications and experience will not vest any right in a candidate for being called for interview. The Centre reserves the right to call for interview only those candidates who in its opinion are likely to be suitable and will not entertain any correspondence in this regard.
2. Canvassing in any form and/or bringing in any influence will be treated as disqualification for the post.
3. Higher start may be given to meritorious and outstanding candidates.
4. The Director, NCCS reserves the right to cancel the recruitment process for any/all the posts mentioned above.
5. No interim enquiries will be entertained.
6. Persons already in employment should forward their applications through proper channel.
7. Only those SC/ST candidates who are not employed anywhere will be paid TA for attending the interview as admissible under the rules.
8. Applicant should arrange to send at least three letters of reference to the Director, NCCS on the address mentioned above.
9. Age limit and experience may be relaxed in exceptional cases.
10. Candidates willing to be considered for more than one position, should apply separately for each position.

RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degree in Indian Universities

SOCIAL SCIENCES

Journalism

1. Laha, Prabir. **Role of 'Prabashi' patrika in freedom movement of India, 1930-1942.** Calcutta. Prof Sumit Kumar Mukherjee, Head (Retd), Department of Journalism, University of Calcutta, Calcutta.

Psychology

1. Antony, Sobha. **Neuropsychological deficits in acute and chronic schizophrenics.** Kerala. Dr Immanuel Thomas, Lecturer, Department of Psychology, University of Kerala, Kariavattom.

2. Raakhee, A S. **Mental health, temperament and alienation of the aged.** Kerala. Dr H Sam Sananda Raj, Department of Psychology, University of Kerala, Kariavattom.

Sociology

1. Chauhan, Ravinder Kumar. **The changing patterns of family in District Shimla of Himachal Pradesh : A sociological study.** HP. Dr O P Monga, Department of Sociology, Himachal Pradesh University, Shimla.

2. Sanap, Madhav Gunajirao. **A study of socio-psychological factors of the accused involved in crime against women in Kolhapur District.** Shivaji. Dr R B Patil, Reader, Department of Sociology, Shivaji University, Kolhapur.

Social Work

1. Jagdale Udavrao Pandurang. **Psycho-social problems of HIV/AIDS patients : A study in Sangli District.** Shivaji. Dr K Pradeep Kumar, Department of Social Work, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

Political Science

1. Gupta, Nita. **Sheet yuddhottar Bharat Americi sambandh.** Vikram. Dr Gopal Krishna Sharma, Prof, School of Studies in Political Science, Vikram University, Ujjain.

2. Kuldhiya, Leena. **Rajnish ka rajnitik chintan : Ek anusheelan.** Vikram. Dr G K Sharma, School of Studies in Political Science, Vikram University, Ujjain.

3. Rajender Singh. **Panchayati Raj in Himachal Pradesh : A comparative study of Kangra and Shimla district.** HP. Dr O C Sood, Department of Political Science, Himachal Pradesh University, Shimla.

4. Sharma, Priti. **Congress kee Bharat ke samajik arthik vikas mein bhumika, san 1980 se 1995 tak.** Vikram. Dr Chain Singh Panwar, School of Studies in Political Science, Vikram University, Ujjain.

5. Tomar, Anita. **Madhya Pradesh Panchayati Raj Adhiniyam 1962 se 1993 tak : Ek vishleshan.** Vikram. Dr Chain Singh Panwar, School of Studies in Political Science, Vikram University, Ujjain.

Economics

1. Bhosale, Tanaji Maruti. **Block-level artisans' co-operatives in Sangli District.** Shivaji. Dr P B Kulkarni, Department of Economics, Willingdon College, Sangli.

2. Dandekar, Vandana Shripad. **Returns to Education in sugar co-operatives in Sangli District : An economic analysis.** Shivaji. Dr J F Patil, Director, B C U D, Shivaji University, Kolhapur.

3. Kamble, Prakash Shankar. **Finances of Kolhapur Municipal Corporation.** Shivaji. Dr A A Dange, Department of Economics, Shivaji University, Kolhapur.

4. Patil, Jagannath Shamrao. **Economics of grape farming in Tasgaon Taluka.** Shivaji. Dr J F Patil, Director, B C U D, Shivaji University, Kolhapur.

Law

1. Sharafennisa Begom, M.S. **Law relating to misleading commercial advertisements with particular reference to Consumer Protection Act and the MRTP Act.** Kerala. Dr K C Sunny, Lecturer, Department of Law, University of Kerala, Kariavattom.

Education

1. Kumbhar, Pushpanjalee Appaji. **A study of the impact of the medium of instruction at school level on the performance of individuals pursuing engineering and medical courses.** Shivaji. Dr (Smt) M S Padmini, Department of Education, Shivaji University, Kolhapur.

2. Shikalgar, Ruksana Ilahi. **A study of the community as a learning centre for school students.** Shivaji. Dr (Mrs) C M Yeole, Department of Education, Shivaji University, Kolhapur.

3. Singh, Indubala Ummed. **Environmental education through video-instructional package : An exploration.** S Gujarat. Dr R B Chaudhari, Department of Education, South Gujarat University, Surat.

Commerce

1. Angra, Suneel Kumar. **Normative model for financial appraisal of commercial undertakings.** HP. Dr S P Bansal, Department of Commerce, Himachal Pradesh University, Shimla.

2. Chelani, Laxman. **Cement udyog kee karyarat ikaiyon ka vittiya prabandh evam vishleshan : Ujjain Sambhag ke sandarbh mein.** Vikram. Dr R S Patel, Prof (Retd), Madhav College, Ujjain.

3. Dhar, Raj. **A critical appraisal of post office small savings scheme with special reference to Himachal Pradesh.** Dr S P Bansal, Department of Commerce, Himachal Pradesh University, Shimla.

4. Diwan, Vinayak Vasant. **Management of water resources : Case study of Kolhapur water supply schemes.** Shivaji. Dr V V Khanzode, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

5. Duggappa, M C. **Resource mobilisation and investment policies of Unit Trust of India.** Shivaji. Dr C S Shreshthi, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

6. Dulta, Joginder Singh. **Working capital management of horticulture industry in Himachal Pradesh : A case study of Himachal Pradesh Horticulture Produce Marketing and Processing Corporation Limited, HPMC.** HP. Dr S S Narta, Department of Commerce, Himachal Pradesh University, Shimla.

7. Govindankutty, K. **Problems and prospects of milk based industries in Kerala.** Kerala. Dr K Sreeranganathan, Lecturer, Government College, Kattappana.

8. Hiremath, Panchakshri Rudrayya. **A study of supervisory training and practices in selected industries in Maharashtra.** Shivaji. Dr P S Rao, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

9. Jacob, Cherian. **Workers' perception of personnel policies in selected tyre manufacturing units.** Shivaji. Dr V V Khanzode, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

10. John, K C. **A study of the export trade of Kerala.** Kerala. Dr S Kevin, Reader, Department of Commerce, Institute of Distance Education, University of Kerala, Kariavattom.

11. Joshi, Sandeep. **Impact of Integrated Rural Development Programme on poverty alleviation and employment generation of agriculturists in Panna District of M P.** Vikram. Dr R S Patel, Prof (Retd), Azad Nagar, Ujjain.

12. Kamal Dev. **Poverty among agricultural labourers in Punjab.** HP. Dr S P Bansal, Department of Commerce, Himachal Pradesh University, Shimla.

13. Kishor Singh. **Investment behaviour of horticulturists in Himachal Pradesh : A case study of Shimla District.** HP. Dr S S Narta, Department of Commerce, Himachal Pradesh University, Shimla.

14. Kuldeep Singh. **A comparative study of public and private sector commercial banks in India.** HP. Dr S P Bansal, Department of Commerce, Himachal Pradesh University, Shimla.

15. Marathe, Ravindra Appasaheb. **A critical study of motivation and its impact on the behaviour of employees in selected industrial units in Kolhapur District.** Shivaji. Dr V M Hilage, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

16. Nare, Purandar Dhanpal. **A study of bakery industry in Belgaum District with special reference to financial and marketing problems.** Shivaji. Dr C S Shreshthi, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

17. Rangola, Suresh Kumar. **A study of managerial and executive training programmes and their impact on productivity in selected industrial units in Maharashtra.** Shivaji. Dr S S Wadkar, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

18. Ravinder Kumar. **Management of working capital : A case study of some selected service sector undertakings in H P.** HP. Dr S P Bansal, Department of Commerce, Himachal Pradesh University, Shimla.

19. Sharma, Vivek Kumar. **Problems and prospects of tea industry in Himachal Pradesh.** HP. Dr Sunil Kumar Gupta, Department of Commerce, Himachal Pradesh University, Shimla.

20. Varughese, Philip. **Operational efficiency of public sector undertakings in Kerala : A study of the manufacturing units.** Kerala. Dr S Mohanan, Lecturer, Department of Commerce, VTMNSS College, Dhanuvachapuram, Thiruvananthapuram.

21. Wale, Vishwanath Shankarrao. **A study of structure and growth of industries in Solapur District during 1985-1995.** Shivaji. Dr C S Shreshthi, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

Home Science

1. Amarjeet Kaur. **A study of behavioural manifestations of sexual development of urban and rural adolescents in relation to their attitude towards sex.** Panjab. Prof (Miss) S Gakhar, Department of Education, Panjab University, Chandigarh.

Management

1. Garga, Pawan Kumar. **Export marketing : Problems and prospects of Indian thrust products.** HP. Dr Balram S Dogra, Department of Management Studies, Himachal Pradesh University, Shimla.

2. Jagdish Chander. **Management of primary agricultural credit societies, PACS in HP : A comparative study.** HP. Dr Suresh Kumar, Department of Management Studies, IIMS, Himachal Pradesh University, Shimla.

3. Shandil, Ram Krishan. **Re-engineering management education.** HP. Dr M K Sharma, Department of Management Studies, IIMS, Himachal Pradesh University, Shimla.

4. Sharma, Rajindra Kumar. **Customer complaining behaviour in General Insurance Company.** HP. Dr J B Nadda, Department of Management Studies, IIMS, Himachal Pradesh University, Shimla.

HUMANITIES

Language & Literature

English

1. Dharmender Singh. **The philosophical vision in the selected novels of R K Narayan.** HP. Dr Mita Biswas, Department of English, Himachal Pradesh University, Shimla.

2. George, Chris. **Angelology in the Bible and in Paradise Lost.** Kerala. Dr A J John, Reader, Department of English, University College, University of Kerala, Thiruvananthapuram.

3. Nanaware, Vinayak Shankar. **Imagery in modern Indian experimental poetry in English.** Shivaji. Dr J A Shinde, Department of English, Shivaji University, Kolhapur.

4. Pawar, Madhavi Sanjeev. **Contemporary Indian women novelists in English : *A feminist study*.** Shivaji. Dr J A Shinde, Department of English, Shivaji University, Kolhapur.

5. Sanyal, Urmila Rajan. ***The moral vision of Muriel Spark*: A critical study.** Shivaji. Dr C J Jahagirdar, Department of English, Shivaji University, Kolhapur.

6. Sharma, Kiran. **Art of characterization in Arun Joshi's novels.** HP. Dr V P Sharma, Department of English, Himachal Pradesh University, Shimla.

7. Sharma, Sandhya. ***Transformation via the feminine* in the male protagonists in Raja Rao's The Serpent and The Rope, The Cat and Shakespeare, R.K. Narayan's The English Teacher, The Vendor of Sweets and Bhabani Bhattacharya's Music for Mohini and a Dream in Hawaii : An interdisciplinary study** HP Dr V P Sharma, Department of English, Himachal Pradesh University, Shimla

German

1. Joe, T I. **The man-woman relationship in the novels of Gunter Grass.** Kerala. Dr Santhakumari S, Reader and Head, Department of German, University of Kerala, Thiruvananthapuram

Sanskrit

1. Asoka Kumar, V. **Vyavaharamala translation and study** Kerala. Dr T Devarajan, Reader, Department of Sanskrit, University of Kerala, Thiruvananthapuram

2. Baby, S. **Philosophy of Sri Sankara based on the Bhasya of Mandukyopanisad** Kerala. Dr P Syamala Devi, Reader, Department of Sanskrit, University of Kerala, Thiruvananthapuram

3. Jha, Anil Kumar. **Devi Bhagavata mein kavyatattva** Panjab. Dr Damodar Jha, Vishveshvaranand Vishwa Bandhu Institute of Sanskrit and Indological Studies, Panjab University, Hoshiarpur

4. Joshi, Rajani Ramachandran. **Mahabhartateel darshan vichar : Ek chikitsak abhyas** Shivaji. Dr A H Salunkhe, Lokayat, 13, Yashawantnagar, Gendamal, Satara.

5. Kumar, Malika S. **Contribution of Trivancore to Sanskrit literature** Kerala. Dr T Devarajan, Readers, Department of Sanskrit, University of Kerala, Thiruvananthapuram.

6. Sobha, P. **Sankarabhasya on Prasnopanisad : A study.** Kerala. Dr P Syamala Devi, Reader, Department of Sanskrit, University of Kerala, Thiruvananthapuram.

7. Sreelatha, S. **Contribution of Mahodayapura, Cochin to Sanskrit literature.** Kerala. Dr T Devarajan, Reader, Department of Sanskrit, University of Kerala, Thiruvananthapuram.

Hindi

1. Dubey, Ved Prakash. **Muktibodh ka sahitya chintan aur unki rachnasheelata ka mulyankan.** HS Gour. Dr Suresh Acharya, Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

2. Gambhire, Arun Kisan. **Hari Shankar Parsai ke nibandhon mein vyanga : Vividh ayam.** Shivaji. Dr A G Chavan, Department of Hindi, Shivaji University, Kolhapur.

3. Jain, Rashmi. **Tirthankar Mahavir per adharit prabandh kavyon ka sahityik anusheelan.** HS Gour. Dr B P Tewari, Prof and Head (Retd), Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar and Dr (Mrs) Sandhya Tikekar, Government Girls College, Bina

4. Kamal Kishore. **Saptak kavya : Sanskritik chetana ke paripreksya mein.** HP. Dr Saraswati Bhalla, Department of Hindi, Himachal Pradesh University, Shimla.

5. Kuchekar, Bharat Sahebrao. **Bhishma Sahani ke katha sahitya mein chitrit samaj jeewan.** Shivaji. Dr P S Patil, Head, Department of Hindi, Shivaji University, Kolhapur.

6. Meera, K. **Malayalam novels translated to Hindi : A theoretical evaluation.** Kerala. Dr N Suresh, Lecturer, Department of Hindi, S N College, Kollam.

7. Rajesh, A. **Bhishma Sahni ke katha sahitya mein samajik chetna.** Kerala. Dr S Thankamoni Amma, Prof, Department of Hindi, University of Kerala, Thiruvananthapuram.

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9. Vivekanandan Pillai, B. **Vishnu Prabhakar ke natya sahitya mein samajik chetna.** Kerala. Dr S Thankamoni Amma, Prof, Department of Hindi, University of Kerala, Thiruvananthapuram.

Marathi

1. Chandanshive, Sunil Vaman. **Marathi dalit kavitecha chikitsak abhyas.** Shivaji. Dr K J Ingole, Department of Marathi, Sangola Mahavidyalaya, Sangola

2. Gaiakwad, Vinod Manohar. **Swatantrayottar Marathi vangmayateel vinodache swaroop.** Shivaji. Dr V K Shinde, Reader and Head, Department of Marathi, Shivaji University, Kolhapur.

3. Gaikwad, Sampat Eknath. **Dalit atmakathancha samajbhasha vaigyanik abhyas.** Shivaji. Dr H S Nirmale, Principal, Willingdon College, Sangli.

4. Kadam Mahendra Sudam. **Kadambrichi sankalpana ani Marathi navkadambri : Swaroop chikitsa.** Shivaji. Dr R N Thakur, Department of Marathi, Shivaji University, Kolhapur.

5. Kamble, Rajendra Vinayak. **Baburao Bamul yanchya samgra vangmayaya chikitsak abhyas.** Shivaji. Dr P P Kumbhar, 1325/56, E, Udyamnagar, Kolhapur.

6. Kulkarni, Anuradha Govind. **Leelacharitrateel bhashecha bhashavaigyanik drishtikonatool abhyas.** Shivaji. Dr Rohini Tukdeo, 539, Near Jain Basti, Gaonbhag, Sangli.

7. Mirashi, Vinaya Deepak. **Tukobarayanchya abhang**

gatheteel samajik aabhya. Shivaji. Dr H S Nirmale, Principal, Willington College, Sangli.

8. Patil, Sanjay Dasharath. **Mahadev More yanchya sahityacha sarvageen abhyas.** Shivaji. Dr J N Kalake, Department of Marathi, K H College, Gargoti.

9. Warake, Anand Joti. **Jaiwant Dalvi yanchya natakancha vangmayeen abhyas.** Shivaji. Dr V H Nimbalkar 15 Shabadgandha, J P Nagar, Gargoti.

Tamil

1. Deva Eve, D. **The language study of Thiruppukal with syntax and semantics.** Kerala. Dr Kanchana, Reader, Department of Tamil, University of Kerala, Kariavattom.

Geography

1. Anil Kumar. **Spatial patterns, process and environmental impact of industrialization in the Upper Ganga-Yamuna Doab.** HP. Dr H N Mishra, Department of Geography, Himachal Pradesh University, Shimla.

2. Bharadwaj, Neerja. **A study of urban environment in million cities of Madhya Pradesh.** HS Gour. Dr R S Dubey, Prof, Department of Geography, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

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7. Sharma, Devi Datt. **Impact of forests on the economy and environment of Himachal Pradesh.** HP. Dr H N Mishra, Department of Geography, Himachal Pradesh University, Shimla.

History

1. Balannavar, Renuka Gopalrao. **Religious history as revealed in art and architecture of Ancient Maharashtra.** Shivaji. Dr B R Kamble, Prof and Head, Department of History, Shivaji University, Kolhapur.

2. Gholap, Sarjerao Devappa. **Rajaram Bapu : A study of his life and work.** Shivaji. Dr B D Khane, Department of History, Shivaji University, Kolhapur.

3. Naik, Chandravadan Mohanrao. **History of Ichalkaranji City, 1948 to 1990 : Socio-economic study.** Shivaji. Dr B D Khane, Department of History, Shivaji University, Kolhapur.

4. Powar, Vilas Shankar. **Freedom movement in Kolhapur State.** Shivaji. Dr B D Khane, Department of History, Shivaji University, Kolhapur.

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- Conceptual issues
- Pedagogical issues
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- Case studies

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Whether published
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K. GOPALAN

Educational Technology
— New Horizons

S.S. GOSAVI & M.M. AMRITKAR

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— A Model for Effective and Credible Evaluation

SHASHI AGRAWAL

The Future of HRD in the Developing World & New Role of HRD Professionals

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Editor :
SUTINDER SINGH

Educational Technology
New Horizons

K. Gopalan*

According to the directive principles of state policy (Article 45), India should have provided universal elementary education (UEE) to all children in the age group 6-14 by the year 1960. Even today, in 1997, after all our efforts to provide education for all during the past half a century, it is estimated that about 350 million of our population are still illiterate. Similarly, while more than 30% of the population in the age-group 18-23 in advanced countries are in the higher education system, in India this percentage is only about 6. Realising the danger of this disastrous situation, India has embarked upon a great adventure, the adventure of utilising mass media for spreading education at all levels.

Educational Technology

Some people associate the term 'educational technology' with the technical equipment such as slide projectors, television sets and computers, while others relate it to a clinical and systematic analysis of the entire teaching-learning process in an attempt of maximise its effectiveness. Actually, educational technology is an interesting amalgamation or symbiosis of 'technology in education' and 'technology of education.' While technology in education covers every possible means by which information can be presented through hardware and software, technology of education is concerned with several intangible aspects such as learner characteristics and behaviour, structure of the subject matter or learning, and application of appropriate principles of physical, social and behavioural sciences. Educational technology is a systematic way of designing, implementing and evaluating the total process of learning and teaching in terms of specific objectives based on research in human learning and communication, and employing a combination of human and non-human resources to bring about effective instruction. Its primary role is to increase the efficiency and effectiveness of the entire teaching-learning process through a systems approach putting to use modern communication technologies and the media.

Radio Broadcast for Education

Educational technology in India has come a long way from the use of simple audio visual aids to that of electronic media. The history of radio broadcast for education can be traced back to the year 1932 when the All India Radio (AIR) started offering programmes for schools for the first time. At present, several stations regularly produce programmes for the schools and a large number of auxiliary stations relay these programmes to reach children and teachers in remote areas. Based on numerous experiments and studies, the broadcasts have been made as self-sufficient as feasible to ensure that the message of the broadcast is communicated to children even when the necessary assistance is not provided by the teachers. The radio programmes have also been made relatively independent of the pre and post-broadcast activities of learners.

---

*Former Vice Chancellor, Cochin University of Science & Technology, 'Chameli', Cherumukku, Trichur-680 020.

Television for Education

Most people do not know that television was originally introduced in the country with the main objective of using it for educational purposes. The first experimental television service in India was inaugurated in Delhi in 1959. During 1960-61, a series of social education programmes were telecast and curriculum-based school television programmes were launched in Delhi on an experimental basis. Television was introduced in the schools with the major aim of providing experiences and facilities that the school could not afford to provide, to fill in gaps in the curricula, to maximise the learning opportunities and to improve the teaching-learning processes. Educational television (ETV) was found to be very effective in improving the academic performance of students, increasing their interest in science and improving the standard of teaching by teachers. Regular TV service was launched in Delhi in 1965. However, the expansion of ETV service took place only from 1972 onwards, when an educational technology programme was initiated.

Mass Media for Education

The educational technology programme initiated in 1972 was directed at utilising communication technologies for bringing about qualitative improvement in education, widening access to education, and reducing existing educational disparities between different regions of the country as well as different sections of the population. The scheme was formulated in the context of expansion of television facilities and the use of a satellite being made available for educational purposes. It was intended to stimulate the use of television as well as other instructional media like radio and film to bring about qualitative improvement in education. Under this scheme, several facilities were expanded and new infrastructure created for software development in radio and television. The availability of satellite and plans for expansion of satellite technology for TV and radio network opened up new avenues for the large scale use of the mass media in education.

Satellite Instructional Television Experiment (SITE)

The one year long satellite instructional television experiment (SITE) which commenced on 1st August 1975 and concluded on 31st July 1976 marked the beginning of a series of innovative and constructive educational television programmes for national development and for educating the Indian masses living in remote rural areas. The SITE educational programmes were also aimed at making the children sensitive to, and learn, community living and improve their basic concepts and skills in the areas of numeracy, language and science. The programmes were directed at creating a positive attitude to formal education and making education interesting, creative, purposive and stimulating. The educational programmes were so designed as to familiarise children with facts and matters normally beyond their observation and experience. During the period of SITE, numerous studies were undertaken and data collected on life and communication patterns, and attitudes and responses of people to educational messages.

INSAT for Education Project

Encouraged by the success of SITE in providing education to people in remote rural areas, the Government of India initiated steps to develop a plan of operation for the utilisation of television and other facilities that became available with the launching of Indian satellites under the INSAT series and with the installation of high power and low power transmitters (HPTs & LPTs) in the country. The INSAT for Education project began in October 1983 with the transmission of educational television programmes for children in the age-group 5-11 years. This coverage was initially meant for clusters of villages in six states : Andhra Pradesh, Bihar, Gujarat, Maharashtra, Orissa and Uttar Pradesh, which came to be known as the INSAT states. In 1986 and 1987, the transmission was increased to cover the entire six states and all the Hindi speaking states of the country with the help of INSAT-1B, HPTs & LPTs. At present ETV programmes are telecast in several languages including Hindi, Gujarati, Marathi, Oriya and Telegu. These ETV programmes are relayed by all HPTs & LPTs in the six INSAT states and other Hindi-speaking states. These programmes reach more than 500 million people of our population.

Higher Educational Television (HETV)

The University Grants Commission (UGC) has taken the initiative to utilise the time slot available for higher education to telecast programmes in higher education titled Countrywide Classroom, through which higher education is spread to remote and backward areas of the country. The commission is at present supporting seven educational media research centres (EMRCs) and ten audio visual research centres (AVRCs) for training of personnel and production of software. The Consortium for Educational Communication (CEC) provides the institutional framework to sustain and enhance the ongoing media activity of the EMRCs and AVRCs and explore new technological advances in the field. It has also started making monthly programmes and producing educational programmes for transmission through the enrichment channel of Doordarshan. The CEC has also taken steps to produce programmes on contemporary issues such as environmental awareness, safe drinking water and the prevention of AIDS

Distance education accounts for nearly 12% of the total enrolment in higher education and is the emerging reality in the educational scene of the country. The open learning system was initiated to augment opportunities for higher education as an instrument of democratising education and to make it a life long process. Distance education is a vital mode of transferring knowledge to the ever increasing aspirants. It requires as a matter of pre-requisite multimedia instruction and its success substantially depends upon the availability of broadcasting and telecasting. Improvement in the quality of distance education programmes is being brought about with the help of audio, video, radio and television facilities. Doordarshan has been telecasting the programmes of Indira Gandhi National Open University (IGNOU) since May 1991. The Bombay and Hyderabad stations of the All India Radio have been broadcasting selected audio programmes of IGNOU since 1992. The introduction of interactive video-communication systems (two-way telephones, interactive television and tele-conferencing) has opened up new possibilities in the realm of distance education. The IGNOU is already making use of some of these facilities. It has recently set up an electronic media production centre called *Sanchar Kendra*. It has plans to launch a variety of mass training programmes in various fields to meet the educational expectations of a large country like India.

The project on information & library network (INFLIBNET) launched by the UGC in April 1991, is a computer-communication network for linking library and information centres in universities, deemed to be universities, institutions of national importance, UGC information centres, and R & D institutions through the application of computer and communication technologies to enable them to optimally utilise their resources. The INFLIBNET has created a centralised database of academic holdings in which data received from these institutions are entered. This will ultimately lead to a national union catalogue for on-line access. The INFLIBNET is also helping university libraries to computerise their records by offering them facility of down-loading from its authenticated master file. Development of an appropriate library management software has also been taken up taking into account the requirements of university libraries.

The developments in communication technologies have had tremendous impact on higher education, which is fast becoming an international enterprise constantly entering unchartered areas. The universities have started thinking internationally as regards their curriculum and course contents. Global universities are emerging bringing together students and faculty from many countries through computer networks, satellite television and such other means. The networking of research bases and the creation of information highways have radically changed the methodologies of advanced studies and research. Today, a research scholar can have access to unlimited information and is exposed to a much wider spectrum of ideas and concepts.

Information Superhighways

The media of print material, telephone, radio, video, television and computers have now been integrated to produce information superhighways that facilitate rapid transfer of information on a global scale. The information superhighways have already revolutionalised life in many advanced countries. Globally, the most important superhighway is the INTERNET, which was established in the United States in 1969. Today, it has over 40 million members spread over 130 countries. It allows members to access 20,000 network and thus link up with organisations, academic institutions and research groups the world over.

Many information sources and networks have also been established in India. The NICNET is a satellite based government information network set up by the National Informatics Centre (NIC) of the Planning Commission in 1977. Other networks include the National Resources Data Management System (NRDMS), the National Information System for Science & Technology (NISSAT), the Education & Research Network (ERNET), the Defence Science Information Network (DESINET), the Agricultural Field Experiment Information System (IASRI), the National Management Information System (NMIS) for science & technology sector, and the integrated Inventory Information System (IIIS). Indian computers can hook-up with INTERNET through the ERNET of the Department of Electronics or through the NICNET of the NIC.

The Future

For survival and to take full advantage of the information revolution, India has to become a part of the information superhighway. While educational technology in India has been trying to make use of modern developments in communication technologies and the media, the fact remains that we have yet a long way to go to reach the levels attained by advanced countries. Our basic infrastructure and supportive sub-systems need considerable strengthening. The rapid developments now taking place in information technology call for revolutionary changes not only in our methodologies and concepts relating to education, but also in our policies regarding teaching, research and educational administration. With our teeming millions who have not only to be educated, but also kept updated on a continuing basis, we have no other way except to use modern information and communication technologies for the delivery of education services in as many manifestations as possible. We need to make full use of the future generation INSAT systems with exclusive and separate channels to meet the educational and training demands in various sectors. New experiments, creative innovations, and appropriate strategies have to be developed and tried out to improve access to education and to reorient the content and process of education at all levels. The accent should be on renewal, reinvigoration, and revitalisation of the entire system of education through educational technology and the media. And to achieve this, we will have to change our media policy and also increase our investment in education manifold

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REGISTRAR

Vocationalisation at First Degree
A Model for Effective and Credible Evaluation

S.S. Gosavi*
M.M. Amritkar**

Introduction

UGC has sponsored a scheme of vocationalisation of first degree education and like other universities, University of Pune is participating in the scheme since June 1994. Thirty five different areas have been identified and the scheme is in operation in 19 colleges having the Arts, Commerce and Science disciplines.

The scheme consists of introduction of two papers (each of 100 marks) at first year, second year and third year level. Thus a student has to undergo six papers for each subject that he has selected, constituting about 33% of the total curriculum of his degree programme.

The syllabi for all the papers are centrally prepared by UGC. It is expected that the concerned universities will rearrange the same for unitisation, conduct of practicals, teaching methodologies and will evolve the evaluation systems suitable to their existing pattern, without diluting their contents.

Need

As the scheme has not yet completed its first batch at T.Y. level, during the available period, through different workshops, teachers should identify the operational difficulties and can prepare a final draft of unitisation, practicals, teaching methodologies for the year commencing June 1997.

However, the evaluation system will need immediate thought for its better modification, because it is the backbone of the philosophy of any innovative educational experiment. This is very clear, from the new guidelines received from UGC about the Computer Applications. The guidelines say that evaluation weightage for theory and practicals should be 20 and 80 per cent.

Demands of Vocational Courses

The very nature of the vocational courses demands that the traditional system of theory examination or the existing pattern of the practical examinations in science faculty should not be used as it is and be modified for giving more emphasis on the understanding of applications and the achieving of skills. So theory testing component should be less and practical component should be more in the evaluation. The percentage ratio may vary from one course to another. But common norms be prescribed as the evaluation guidelines.

While doing so, as the UGC expects, the evaluation system should not be diluted. But is there any such system which fits in the framework of general university pattern that is acceptable to the concerned teachers, will fulfil the requirements of vocationalisation of courses and at the same time prove to be a credible evaluation system amongst the students, parents, employers and the society at large? Yes, the University of Pune has adopted a system, which is in operation since 1983, for the vocational and applied courses under the scheme of restructuring of courses and is not only effective but also appreciated by experts in the field.

With the live experience of last more than 12 years to its credit and having made relevant changes in the model on the basis of the feedback every three years, the following model for evaluating the vocational courses is suggested.

The Model

Evaluation for each paper of 100 marks will be divided into two parts:

a) Continuous Internal Assessment ... 30 Marks

b) Annual End-Examination. ... 70 Marks.

A) Details about Internal Evaluation

The internal evaluation will have continuous

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form. In each term the working will be as follows :

(a) *Ist Term-*

i)	Theory Test (preferably objective) (in the middle of term)	... 10 Marks
ii)	Practical Test (After completion of the practical course. Before closing of the term)	... 30 Marks
iii)	Journal/Viva (Term work completed)	... 10 Marks
		50 Marks

(b) *IInd Term -*

As in the Ist Term	... 50 Marks
Total	100 Marks

The marks obtained out of 100 in continuous evaluation throughout the year will be reduced to those out of 30 for the final evaluation.

B) Details about End-Examination

The end-examination of 70 marks will have three parts —

i)	Theory paper	... 30 marks
ii)	Practicals	... 30 marks
iii)	Viva	... 10 marks

i) *Theory paper* : (30 Marks)

This paper will consist of question slips having marks 3, 5, 7, 8, 10 etc. (i.e. the nature of the question is Brief Answer, Short Answer and Long Answer). A question paper of a student will consist of slips of 20 marks each from the syllabi of Ist term and 2nd term. A student has to attempt any questions of total 30 marks out of 40. The time duration will be one hour (60 minutes).

ii) *Practical Paper* : (30 Marks)

This paper will consist of 4 practical slips each of 10 marks and are so selected that 2 slips are taken from each of the practical slips completed in first and second term. A student will be asked to make an attempt of any 3 slips out of 4 slips and will be evaluated for 30 marks. The time duration will be 2 hours (120 minutes).

iii) *Viva :*

At the time of the annual end-examination on the basis of the theory question paper that the student has answered and his term work (Journals) of both the terms that he has completed, the examiners will take his viva for the time duration of 5 to 10 minutes for each student. The viva will be for 10 marks.

(C) Conduct of End-Examination:

- The end-examination will be conducted batchwise.
- A batch will be of maximum 12 students.
- Time duration will be 4 hours and there will be 2 batches in a day (8.00 to 12.00 noon) and (2.00 to 6.00 p.m.)
- the procedure of conduct will be as follows :

  A batch of 12 students will be divided into two groups 'A' & 'B'. Each group will have maximum 6 students (It is expected to have minimum 6 different units of computers in the laboratory).
- In the first two hours (120 minutes) (say 8.00 to 10.00 a.m.)

Group 'A' . Practical Examination (30 marks) (Computer Laboratory) (Time 120 Minutes)

Group 'B' : i) Theory Paper (30 marks)
(Time 60 minutes)
(Outside the Laboratory in the Lecture Hall)

ii) Viva - (10 marks) (Time Maximum 60 Min.) (Outside the laboratory in the Lecture Hall)
(it is after the theory exam. is over)
(5 to 10 minutes for each student. There are 6 students).

The above conduct is to be repeated in the next two hours, by changing the position of Group 'A' and 'B' (i.e. from 10 to 12 noon)

D) Eligibility and Passing

i) A student must have minimum 10 marks out of 30 marks in the internal continuous assessment and must have completed 75% practicals of each term. Then only he will be allowed to appear for end-examination.

ii) A student must get a minimum of 30 marks out of 70 in the annual end-examination and 50 out of total 100 marks to pass the course.

iii) If the student is absent for annual end-examination then he will be marked 'ab' in the column of out of 70 marks and 'Fail' in the column out of 100 marks. That is addition in the column of 100 marks will not be executed.

(E) Framing Open Question Bank

We will have to evolve the question slips for theory as well as for practicals. For this purpose a two days workshop be conducted before the beginning of the academic year. The slips drafted be communicated to all the centres in advance. Each university can do this exercise for its area. Initially the procedure can be started from F.Y. level and then can be continued successively. The feedback is a continuous process.

(F) For Project Work Evaluation

The same ratio 30 : 70 of internal assessment and end-examination be retained for evaluation of project work.

i) The internal guide/teacher is to evaluate the student for 30 marks for his continuous work throughout the year. It is expected that the student is assigned the work in summer vacation that he gets after S.Y. level and Diwali Vacation in his T.Y. level

ii) The end-examination of 70 marks will be conducted by internal guide/teacher and the external examiner appointed by the university. Each one will evaluate the student for 35 marks. The checklist of marks will carry the following points :

- Involvement in data collection and reliability of data.
- Methods of Analysis.
- Presentation of the project.
- Conclusions drawn.
- Depth of knowledge etc.

iii) The passing criteria will be same as it is for other courses.

Advantages

i) This model gives proper weightage to skill and practicals.
ii) The teachers concerned are all involved in the entire process of evaluation.
iii) No separate paper setting is required.
iv) Every student has a different question paper, so no scope for copying and malpractices.
v) Theory and practical, both papers are conducted at the same time.
vi) Evaluation is on the spot.
vii) Student will be sure about his performance percentage.
viii) Re-evaluation will not be needed.
ix) Result can be declared in time.
x) The credibility will increase.

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The Future of HRD in the Developing World and New Role of HRD Professionals

Shashi Agrawal*

Introduction

"Every country develops its system of education to express and promote its unique socio-cultural identity and meet the challenges of the times. India has reached a stage in its economic and technical development when a major effort must be made to derive the maximum benefit from the assets already created and to ensure that the fruits of change reach all the sections of the society".

In the Indian way of thinking a human being is a positive asset and a precious national resource which needs to be cherished, nurtured and developed with tenderness and care coupled with dynamism and great sensitivity.

India's political and social life is passing through a phase which poses the danger of erosion to long accepted values. The goals of secularism, socialism, democracy and professional ethics are coming under increasing strain.

The rural areas with poor infrastructure and social life is passing through a phase which poses the danger of erosion to long accepted values. The goals of secularism, socialism, democracy and professional ethics are coming under increasing strain.

The rural areas with poor infrastructure and social services will not get the benefit of trained and educated youth unless rural-urban disparities are reduced and determined measures are taken to promote diversification and dispersal of employment opportunities.

The growth of our population needs to be brought down significantly over the coming decades and spread of literacy and education among the women is only the solution to the problem. But we are in very down position. "India ranks low in women development", (UNDP) Human Development Report, 1996.

Life in the coming decades is likely to bring new tensions together with unprecedented opportunities.

To enable the people to benefit in the new environment will require new designs of Human Resource Development (HRD) for 21st Century (NPE, 1986).

Need

Development of a nation depends upon the development of human resources (HR), their strength, quality and investment. Industrial growth cannot be possible from more investment unless improvement in the manpower. The progress of a country depends upon investment in human capital. Human capital refers to investment in education, training, health and recreation of human beings

Revolution in communication technology, knowledge explosion, changing pattern of work and learning, challenge to education, are a must for improvement in the manpower.

"Indian perception of 'Education' is essentially for all and fundamental to our all round development, materialistic as well as spiritual"

Education refines sensitivities and perceptions that contribute to national cohesion, scientific temper and independence of mind and spirit and ultimately to reach the goals of secularism, socialism, democracy enshrined in our constitution.

Education develops manpower for different levels of economy and is ultimate guarantee to national self reliance. Education is a unique investment in the present and the future (NPE, 1986).

Statement

"The future of HRD in the developing world and New Role of HRD Professionals".

Objective

(1) To analyse and identify various forces;

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(2) To design HRD strategies;
(3) To prepare a workable HRD model; and
(4) To suggest new role of HRD professionals.

Variables

The futuristic study is interdisciplinary research. In the study an effort has been made to study the perceptions of the sampled population about the impact of global forces on the future development of HRD in developing world (specifically India) through future wheel exercise and opinions.

Concept and Meaning of HRD

HRD refers to the relationship of ownself and with society.

- HRD also refers to factors in the individual which determine personal satisfaction (factors in the personality of the individual) social utility (attitude) and efficacy (professional skills).
- Cognitive abilities — intelligence
- Acquired/personal abilities — rationality/work commitment.
- Social attitudes — altruism/consumerism/health/population.
- Work competence — skills/creativity.

HRD in social terms

HRD is a process of modernization and enables people to lead fuller and richer lives. Therefore, education is considered as an ingredient and an instrument of HRD. (Education — Catalyst Role).

HRD in economic terms

HRD is accumulation of human capital, its effective investment in the development of an economy. Economists refer to HRD as a process of increasing the knowledge/skills/capabilities of all the people in the society.

HRD in political terms

HRD is a process of preparing people for effective participation in the political processes

Samples

The study is confined to a sample of group of experts drawn from political, social, economic, technological, management, administration and educational fields. (N = 100)

Tools and Techniques Used

Future study has its own methods and approaches. The following methods were used for the purpose of this study.

i) Brainstorming
ii) Future wheel exercise
iii) Scenario building
iv) Opinionnaire for expert group

Future wheel technique is an important method of generating consequences for future.

Methodology

- Analyse and identify forces and their consequences from the future wheel responses.
- Identify possible futures towards planning.
- Prepare variety of possible future scenarios.
- Use future trends in planning HRD strategies and prepare Workable HRD model.

Analysis

Analysis of future wheel responses and scenario building — After data was collected, the content analysis of the completed responses was done qualitatively. For the purpose of content analysis, major categories and sub-categories were identified as given in the preceding section.

After analysis of the responses given with reference to main forces responsible for global changes, different expert group responses were identified. Opinions of the experts were also analysed and utilized for identification of barriers to HRD.

The global trends now being shaped by social, economic, political, environmental, psychological, cultural and historical, technological and other deeply rooted forces were identified and analysed to project the most likely future trajectory driven by the present course of social evolution. Critical issues and historic transition highlighting the unusual, unfavourable consequences that could result.

The great forces that are integrating the globe into a coherent global order as well as responsible for creating disorder that characterize our time are:

— Social Force, Political Force, Economic Force, Cultural Force, Environmental Force, Scientific and Technological Force, Psychological Force, Historical Force, and Earth as a system guided by collective human choices.

Mega Trends

They represent the driving forces which are responsible for moving the world in new direction — Population stabilization, Production increase, Communication networking/Information Technology revolution, High-Technology revolution, Global Community-Global Economy-Global Culture, Universal Freedom/Human Rights, Diversity with Complexity, Establishment of World Peace, and Higher order value Transcend.

Overall Scenario

All the mega trends can be integrated into a overall scenario to help visualize what the world should look in a broad, general scene when it stabilizes into coherent global order about the 21st century. The world is undergoing a natural process of maturation.

Barriers to Progress — Key issues

Making the leap to a global order, Achieving sustainable development, Reconciling Economic interests, Managing Complexity, and Alleviating the North-South Gap.

Overcome the issues

Disseminate advanced technology to unify the globe, Integrate Economics and Society, Nestle Society into its environment, Decentralize institutions to empower individuals, and Foster collaborative working relationship.

Failures to pursue the path of progress

Ecological Collapse, Low Technology, New Capitalism, Authoritarian rule, and Social Conflict.

Shift from older to new perspective needed

Information Technology, Human Centred Economy, Sustainable Development, Decentralization Institutions, and Co-operative relationship.

Conclusion

On the basis of the different scenarios and from the analysis and interpretation of the data as well as from the discussion of the results of various components, following conclusions were drawn :

The scenario of future of HRD development in developing world generated through this study may act as a guidelines for the HRD professionals to prepare workable futuristic model and programme for HRD.

The changing educational scenario according to the perceptions of the experts determines the new role of HRD professionals.

On the basis of the study the present author has prepared HRD strategies for sustainable development and a workable futuristic model for HRD as example, in addition to visualizing new role of HRD professionals in 21st century. (*Appendices* 1, 2, 3 & 4).

Some points for generalization as KINGPIN can consider using modern educative process as a strong tool for localization and gearing up for the future century.

Now we are approaching the end of the century The new era is just a few steps from us. Next century shall put a lot of new knowledge, thoughts, skills, processes, innovations in our bags.

If we are not able to accept and manage the change and ourselves, lot of conflict and tension would prevail Old knowledge, skills, processes and models even human resources can solve the problems of the 21st century.

The futuristic vision/projection indicated lots of changes in the future also. In political sphere global democracy, perhaps will come up with decentralized power. Societies turn into pluristic, technocratic societies. Transcommunity concept also come up.

Competition, economic liberalization, market forces, cultural crisis, deterioration in fundamental values, doubts in value clarification, imbalance — regional & geographical, egoism, stress, environmental deterioration, explosive population, pollution, value crunch all these are the determining factors of the new century.

"Future shape of education in India is too complex to envision with precision. Yet given our traditions which have almost always put a high premium on intellectual and spiritual attainment, we are bound to succeed in achieving our objectives.

The task is to strengthen the base of the pyramid which might come close to a billion people at the turn of the century. Equally it is important to ensure that those at the top of the pyramid are among the best in the world. Our cultural well spring had taken good care of both ends in the past, the skew set in with foreign dominations and influence.

It should now be possible to further intensify the nationwide effort in HRD with education playing its multifaceted role". (NPE, 1986)

Annexure

OPINIONS FROM THE EXPERT GROUP

Barriers to HRD in India

Poverty (Below poverty line SC/ST), Social injustice/inequality, Illiteracy, Low quality education, Health status, High fertility rate, Prejudice, Inter group intolerance, Gender bias (sexual discrimination).

HRD refers to relationship of ownself & society. Economic development neglects the Human factor in development. Human factors refer to Innate abilities, Acquired abilities, and Attitudes

Causes of slow progress of HRD in the country

Agencies incharge of the programmes withdrew from the action over Inputs — People lack of self confidence, and Continued dependence on aid providing agencies

Integrated HRD strategies

Plan of HRD should provide maximum opportunities for maximum number of people to fully cultivate their potential — Equal opportunity with conditions for success, Remove prejudices, MLL for each stage of education, Education for international understanding and peaceful co-existence — world as a one family, Inter regional mobility — Higher technical education, Nations responsibility — providing resource support for implementing programmes like educational transformation, reducing disparities, universalization of elementary education, adult literacy, scientific and technological research, Open and distance learning for life long education — Universal literacy — Opportunities to youth/housewives/agricultural and industrial workers and professionals to continue the education of their choice & at their pace, Integrated planning for National System of Education — Functional linkages, Reinforce programmes of Research/PG, and Meaningful Partnership : Centre + State.

New role of HRD professional

Indian ministry of HRD has integrated portfolios, consisting of Education/Sports/Youth Affairs/Culture for considering the all round development of the total personality.

Role of HRD Professionals — (*Mega Level*) : Manage the integrated mega functions with holistic view point — HRD planning, Recruitment, Selection; Management of the Interphase with sources of manpower — School, Colleges, Polytechnics, Training and development, Personal and Administrative policy, Planning and Implementation, Career Counseling, and Industrial Relations; Constructive and participatory role; Throwing up creative solutions/optimization earlier unthinkable; Managerial Roles; Interpersonal role — As figure head, Leader, Liaison; Informational Role — As Monitor, Disseminator, Spokesman; Decisional Roles — Entrepreneur, Disturbance Handler, Resource Allocator, Negotiator; Skill developer — Conceptual skills (deals with ideas), Human relation skill (deals with people), Technical skills (deals with things) — Conceptual skills and Technical skills are needed for good decision making while human skills are required for leadership; Planner — Planning — determines in advance what should be done, Looking ahead and preparing for the future, Process for deciding the objectives, and Designing the methods of attainment of those objectives;

As Organizer — Organization function provides everything useful to its functioning, Human Organization, Material Organization. Human organization refers to structure which results from identifying and grouping work/defining and delegating responsibility and authority establishing relationships (Allen, 1958). Staffing function is also considered as Human organization. Different objectives should be required for different kinds of organization to achieve them; As Director — Explain to his people what they have to do and helps them do it to the best of their abilities. Direction involves three functions — Communication, Leadership, and Motivation;

As Controller — Control compels events to conform to plans. Controlling functions involve three elements — Establishing standard of performance, Measuring current performance and comparing it against the established standards, Take action to correct any programme that does not meet those standards. Sound control reflects the guarantee to achieve the objective; An Innovator — For constantly better growth of an organization, as the one who invents a new product or, finding new use for the old ones. Innovation is important function of a HRD professional and considered as a part of planning also; A Representator — Represent his organization before various outside groups/Govt./Unions/Financial Institutions/etc. A representation must win their support by effectively managing the social importance of his organization.

Comprehensive effective leadership

Effective leadership for enduring change — An effective leader is one who not only changes the behaviour of his followers but also changes their attitudes by using his personal powers. Effective leadership forces responsible for shaping his leadership styles are — Force in leader himself, Force in his subordinate, Force in the general situation, and Force in the organization system.

Kingpin — For Generalization

(1) Need to ready to change the mindset and look for ways to improvement, (2) Commitment to fostering change, (3) Anticipate change — To be open to change, and To make and manage the change/forces, (4) Prepare HRD people for 21st century — Improve collective understanding, (5) Committed to work towards common desirable future challenges and our opportunities are being recognised as common, (6) Learning about how to learn and promotion of learning avenues, (7) Reassessment of the fundamental values, (8) Minimise the gap between hopes and realization and inequalities, (9) Comprehensive view and fuller understanding of the socio-economic scenario and environment, (10) Restructuring of HR process with comprehensive/integrated/effective leadership, (11) Search a new vision in the changing world, (12) Learning from mistakes and take advantages from the experience, (13) Leading as internal change agent — Changing the peoples perceptions, and People involvement in educational reconstruction, (14) Transformation of man to universal man through Yogic exercises for the realization of his inner reality of cosmic consciousness, (15) Develop skills for optimising excellence, (16) Competition should be replaced by cooperation (Superman task), (17) Need based practical approach to HRD, (18) Training strategies need to revamp with organizational needs, (19) Developing people at the grassroot level, preparing training materials in regional languages, (20) Community education considered as source of learning and made as an instrument of social change and social transformation towards better citizenship, and (21) HRD recognized as key to sustainable development as the new global logo of development.

Implications

(i) It has implications to designing the futuristic programmes and processes of HRD sectors, (ii) It also has the point of consideration to redesign the role of HRD professionals, (iii) Implication for pre-service and in-service training and development institutions for 21st century, and (iv) It has implication as a model for other developing countries also, specially for more populated countries.

References

National Policy on Education, 1986 · MHRD Govt. of India

Pavitra Saint Hilaire P.B. *Education and Aim of Human Life*, Sri Aurobindo International Centre of Education, Pondicherry. 605002, 1996.

Kohli, U. and Sinha D.P. (Eds.). *Human Resources Development Global Changes and Strategies in 2000 AD*, Allied Publishers Ltd., ISTD, 1994.

Qasim S.Z. (Ed.). *Science and Quality of Life*, The off Setters, New Delhi, 1993.

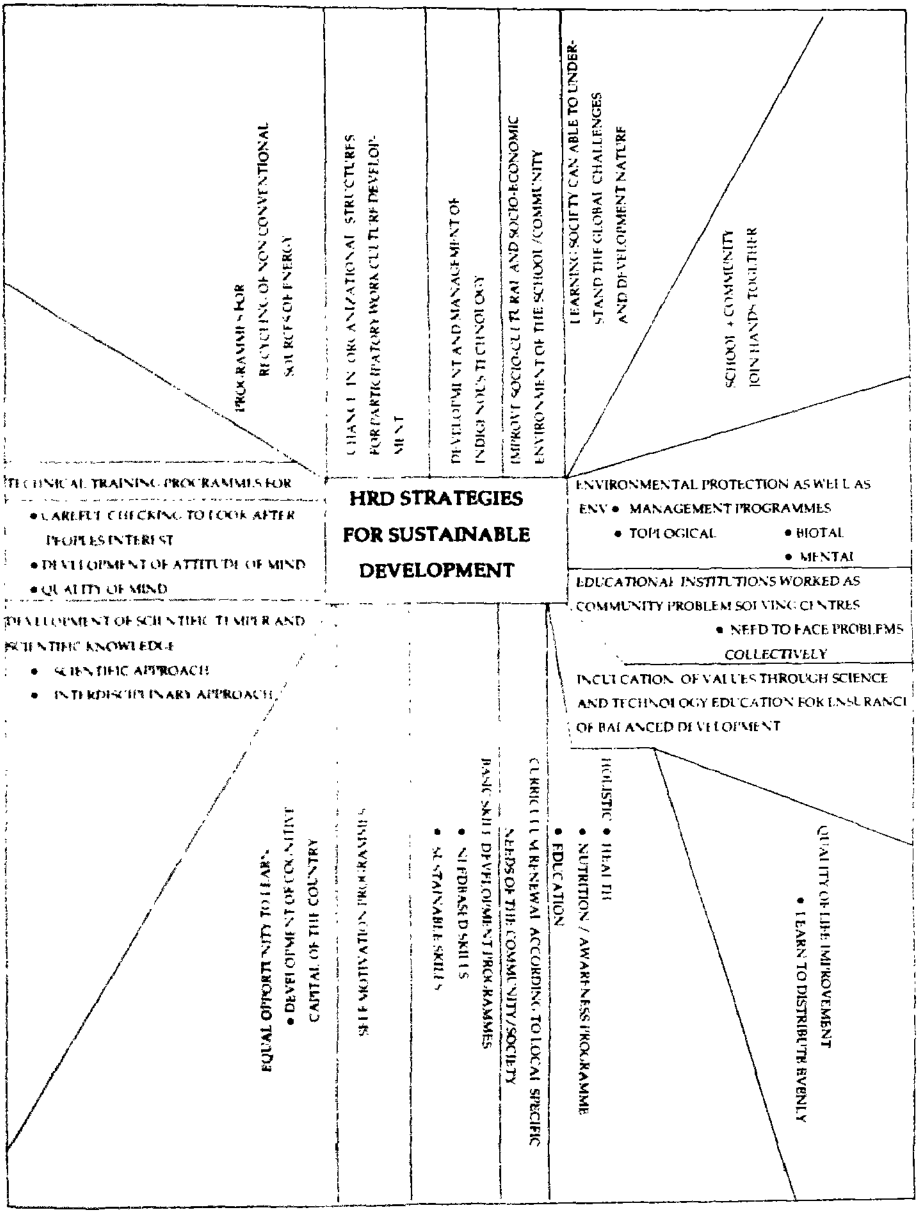
Agrawal, Shashi. *HRD Strategies and Sustainable Development Through Community Education* — Paper presented in the Workshop of the World Conference of ICEA, Jomtien (Thailand) July 31-August 4, 1995.

Jayagopal R. *Human Resource Development : Conceptual Analysis and Strategies*, Sterling Publishers, Delhi, Reprint, 1993.

Parikh, Ramlal. Conceptual Connotations of Third Dimensions of Higher Education, *University News* Vol. xxxiv, July 22, 1996. Weekly Journal of Higher Education, AIU, New Delhi.

Education of All — The Indian Scene : A Synopsis. Department of Education, MHRD, Govt. of India, December, 1993.

HRD Strategies for Sustainable Development



HRD STRATEGIES FOR SUSTAINABLE DEVELOPMENT

PROGRAMMES FOR RECYCLING OF NON CONVENTIONAL SOURCES OF ENERGY

CHANGE IN ORGANIZATIONAL STRUCTURES FOR PARTICIPATORY WORK CULTURE DEVELOPMENT

DEVELOPMENT AND MANAGEMENT OF INDIGENOUS TECHNOLOGY

IMPROVE SOCIO-CULTURAL AND SOCIO-ECONOMIC ENVIRONMENT OF THE SCHOOL /COMMUNITY

LEARNING SOCIETY CAN ABLE TO UNDERSTAND THE GLOBAL CHALLENGES AND DEVELOPMENT NATURE

SCHOOL + COMMUNITY JOIN HANDS TOGETHER

ENVIRONMENTAL PROTECTION AS WELL AS ENV • MANAGEMENT PROGRAMMES
- TOPLOGICAL
- BIOTAL
- MENTAL

EDUCATIONAL INSTITUTIONS WORKED AS COMMUNITY PROBLEM SOLVING CENTRES
- NEED TO FACE PROBLEMS *COLLECTIVELY*

INCULCATION OF VALUES THROUGH SCIENCE AND TECHNOLOGY EDUCATION FOR ENSURANCE OF BALANCED DEVELOPMENT

QUALITY OF LIFE IMPROVEMENT
- LEARN TO DISTRIBUTE EVENLY

HOLISTIC
- HEALTH
- NUTRITION / AWARENESS PROGRAMME
- EDUCATION

CURRICULUM RENEWAL ACCORDING TO LOCAL SPECIFIC NEEDS OF THE COMMUNITY/SOCIETY

BASIC SKILL DEVELOPMENT PROGRAMMES
- NEEDBASED SKILLS
- SUSTAINABLE SKILLS

SELF MOTIVATION PROGRAMMES

EQUAL OPPORTUNITY TO LEARN
- DEVELOPMENT OF COGNITIVE CAPITAL OF THE COUNTRY

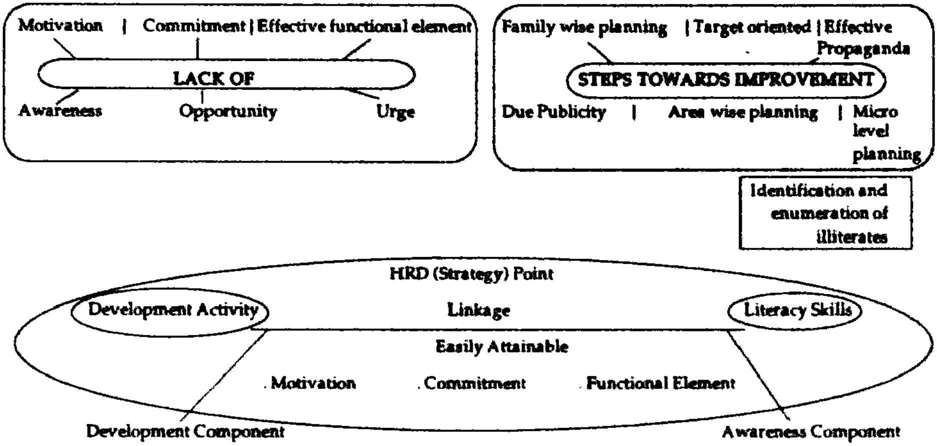
DEVELOPMENT OF SCIENTIFIC TEMPER AND SCIENTIFIC KNOWLEDGE
- SCIENTIFIC APPROACH
- INTERDISCIPLINARY APPROACH

TECHNICAL TRAINING PROGRAMMES FOR
- CAREFUL CHECKING TO LOOK AFTER PEOPLES INTEREST
- DEVELOPMENT OF ATTITUDE OF MIND
- QUALITY OF MIND

Appendix - 2

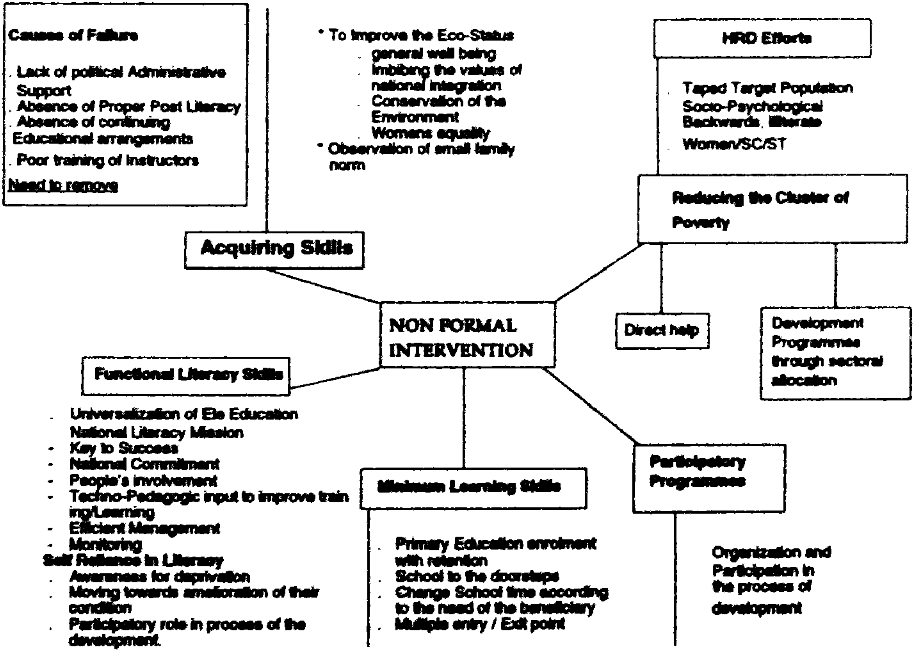
HRD-Strategies for Developing Functional Literacy Skill

Investment in Human Capital - More Productive - Fast rate National Growth
Investment in Physical Assets - Less Productive - Low Rate National Growth



Appendix - 3

Model for NFE Intervention Programme


Causes of Failure
. Lack of political Administrative Support
. Absence of Proper Post Literacy
. Absence of continuing Educational arrangements
. Poor training of instructors
Need to remove
* To improve the Eco-Status
. general well being
. Imbibing the values of national integration
. Conservation of the Environment
. Womens equality
* Observation of small family norm
HRD Efforts
. Taped Target Population Socio-Psychological Backwards, illiterate
. Women/SC/ST
Reducing the Cluster of Poverty
Acquiring Skills
NON FORMAL INTERVENTION
Direct help
Development Programmes through sectoral allocation
Functional Literacy Skills
. Universalization of Ele Education
National Literacy Mission
- Key to Success
- National Commitment
- People's involvement
- Techno-Pedagogic input to improve training/Learning
- Efficient Management
- Monitoring
Self Reliance in Literacy
. Awareness for deprivation
. Moving towards amelioration of their condition
. Participatory role in process of the development.
Minimum Learning Skills
. Primary Education enrolment with retention
. School to the doorsteps
. Change School time according to the need of the beneficiary
. Multiple entry / Exit point
Participatory Programmes
Organization and Participation in the process of development

WORKABLE FUTURISTIC MODEL FOR HRD

FORMAL SECTOR

- ★ School
- ★ Colleges
- ★ Other Educational Institutions

NON-FORMAL SECTOR

- Training Programmes in employing institutions
- Adult Education Programmes
- Life long learning beyond walls
- Activities of various Groups/organization Political/Social/Cultural/Religious
- Yoga for Transformation of man to universal man
- NGOs

EXTENSION WORK

- ★ Extension Work - Promotion of learning avenues through local community
- ★ Scientific determination of learning needs of all age Group identified
- ★ Transmitted Knowledge Skill Values through area based Community approach
- ★ Relevant to people for all Groups
- ★ Community Partnership (Community + Higher Education Institution)

SELF EFFORTS

Self effort made by individual for self development

- ★ By taking formal course
- ★ By Correspondence Course
- ★ By reading books/Instruction materials
- Learning from other informal interactions
- ★ Participation in NFE Programmes

HRD FOR FUTURE EDUCATION AS CATALYST

NEW EDUCATION DESIGN

- ★ Equip the Individual and Society with modern and suitable skills
- ★ Accept the challenge of the future Protecting once cultural Heritage and Identity
- ★ New Generation awareness programme felt need to reinterpret and re-evaluate the past.
- ★ Illuminous past link with future
- ★ To adopt the new practices and appropriate new outlook/vision

INTEGRATED AND RESPONSIVE HRD

- ★ Skill based approach
- ★ Retraining and development of alternate careers
- ★ Give immediate attention
- ★ Large budgetary allocation
- ★ Responsive HRD promotion

Close relationship of Functionaries + Beneficiaries
Highly dedicated
Functionaries
Participative Planning

HELP THE INDIVIDUAL

- ★ To discover
- ★ To develop
- ★ To disciplines - One's creativity ability and talents
- ★ Personal development
- ★ Improving ones capacities to Participate effectively in National development

ALL CURRICULAR AREAS

- ★ Instructional Process component

Use Libraries/Audio
Video Programme
Computerized data bank

- ★ Teaching Learning Process

Capacity of continuing learning
Fit for changing needs of their own time

Towards Value Education

Dr. A.S. Paintal, Programme Director, Centre for Visceral Mechanisms, Vallabhbhai Patel Chest Institute, University of Delhi, delivered the convocation address at the Thirteenth Convocation of the Bharathidasan University, Tiruchirappalli. He said, "India has had a long tradition of the practice of self-control which is being eroded through certain foreign influences notably the media such as television. It is, therefore, urgently necessary for the Universities to make great efforts and devise ways through which the youth of this country can get what we seniors were gifted with i.e. the teachings of our great sages who knew how to develop self control and value virginity, chastity and prevention of promiscuity." Excerpts

On September 8, 1986 I joined the Indian Council of Medical Research (ICMR). A few days later I saw a communication stating that two HIV positive cases had been found in Tamil Nadu. I found it hard to believe this because the disease was not known to exist in India and was known to spread by sexual behaviour. At that time (1986) the disease was known to be largely prevalent in America and certain African countries and was totally unknown before 1960. How had this disease emerged?

Its emergence was preceded by general acceptance of promiscuous sexual behaviour that had been frowned upon. Before 1960 homosexuality was illegal not only in India but it was also illegal in Britain and U.S.A. Then, within a few years after 1960 it came to be legalized and through massive propaganda it came to be accepted by the societies of those countries. So, homosexuality is now an accepted fact in the U.S.A. to such an extent that people are proud to admit that they are homosexuals. This is one of the causes of the spread of AIDS.

In 1986 we felt that there was little chance of widespread occurrence of this disease in India because of our great cultural heritage which embodies many practices that are against free sex, promiscuity, and homosexuality. However, to our great astonishment and dismay the first cases of HIV infection were reported from this State, Tamil Nadu. Where had these cases come from, we wondered? A few months later investigations revealed that they were also in Bombay. This was a great shock to me. Soon I came to the conclusion that the disease must have come into India through foreigners. I, therefore, tried to introduce measures that would prevent sexual intercourse of Indians with foreigners and although I had some success in certain ministries, it was the Law Ministry that finally came in the way of preventing sexual intercourse with foreigners because they said that the right to privacy was a fundamental right of every Indian citizen.

Realizing this we tried to contain the spread of AIDS by other methods, for example, by making people aware of the danger of AIDS. I also organised an Inter University debate on whether sex with foreigners should be banned. All Universities in India took part. However, in this effort, I was frustrated by the opposition by certain so-called modern women of Bombay who tried to portray my efforts as an infringement of their personal freedom. The Chief Secretary of Maharashtra was highly co-operative and had helped us in our efforts to isolate infected prostitutes and help them to stop their profession but the attitude of so-called modern women and men who thought that I was invading their private lives prevented my efforts. The second reason why I did not succeed was that I did not have any managerial skills and sufficient influence on the Press and Doordarshan. Now, ten years later, I am told that there are certain hoardings to be seen in Bombay that advocate avoidance of sex with foreigners. Even now it is not too late for such hoardings to make an impact.

In 1991 I left the ICMR. About that time the Government established the National AIDS Control Organization through money from outside, mainly the World Health Organization. This organization is known for advocacy of use of condoms but they did not seem to advise prominently against promiscuity which is the basic cause of the spread of AIDS (if we exclude for the moment the spread through blood transfusion). This I could not understand Earlier WHO had advocated "Stick to one Partner". This they do not seem to advertise any more. Why? Can any one of you listening to me explain why they failed to advise that we should stick to one partner. By not doing so prominently the authorities such as WHO, and others seem to be implicitly accepting promiscuity. Most societies had, before the middle of this century, disapproved of promiscuity and sex with a person who was already married to some one else. In fact, there are legal devices to counter such activity in many societies.

Now the situation is such that so long as you cannot be sued society seems to have no strong objection to people having sex with already married men or women. In fact, in India the situation has become so bad that I saw a television programme on EL TV where men and women were openly discussing their affairs with other married men and women and were justifying this behaviour. I do not know how the Government of India permits this sort of presentation knowing fully well that it is totally irreconcilable with our culture and the harmful effects it can have on society especially in the spread of AIDS. I admit that this sort of behaviour cannot be totally prevented just as murder and rape cannot be prevented even by law but society sees to it that murder and rape are not approved by any organisation.

We must not despair. All organisations need to find suitable methods for preventing the spread of AIDS. For example, in 1992 I put up a proposal to start the teaching of the Control of spread of AIDS. This was the result of some communication with the then Prime Minister (Shri Narasimha Rao) who saw merit in my proposal and said that he would discuss it with me in detail later. In brief, what I told him was that the most likely people to get the infection were the most sexually active group of the population, i.e. the 15 to the 22 year old group. This constituted 100 million men and women. In the Universities this population would consist of undergraduate and postgraduate students who would have the intelligence to understand the implications of the courses of instruction in this field. These young men and women could constitute the role models for less fortunate young people who do not have the privilege of studying in Universities and the messages could, therefore, spread to people who did not have the opportunity of attending high school. From there the messages could trickle down to the group most likely to be affected such as truck drivers who ply trucks from the North to the South of India. Such people living a highly stressful existence need ways of getting over their tensions and sexual contacts are an easy way out wherever they go. Society must understand their needs and find safe ways to fulfil them.

Thus, I think, a start has to be made in the Universities. What will the dimensions of the task be? India is very fortunate because we have a culture that is thousands of years old and the ramifications of this culture were until recently well practised in all parts of India. I told the Prime Minister that we have to worry only about 100 million boys and girls who are between the ages of 15 and 22. Our great good fortune is that about 50 million of these are girls and all subcultures of India value virginity which is the greatest protection against acquiring the HIV infection and AIDS. So we have to worry about 50 million boys which our course of instruction could cover. I had suggested to the Vice-Chancellor of Delhi University that a suitable course could be devised with the help of the faculties of Languages, Arts and Science along with help from film producers. In fact, the Secretary of the Ministry of Human Resource Development was agreeable to the idea that such a course could be easily fitted into the time made available for the course in place of optional English and History of Science. And with the help available from film and video makers one could devise a set of instructions that would be accepted by, say, at least half the total population of students.

Dr. Chaturvedi the well known maker of educational programmes had agreed to help us in this effort and had, in fact, applied to NACO for the required finances. Unfortunately, the bureaucrats and other organisations could not see beyond the slogan "Use Condoms" which according to them and WHO was the be all and end all of all slogans for preventing AIDS. They did not see merit in Dr. Chaturvedi's proposal and so we could not proceed further.

One might ask "Is it now too late to do anything? Will it not be a case of bolting the door after the horse has fled?" The answer is "No". It is of the utmost importance for citizens to develop self-control. Several countries develop self-control (called discipline) by them to order that various activities in the country, e.g. traffic control etc can run smoothly and without which it is impossible to run a civil machinery. India has had a long tradition of the practice of self-control which is being eroded through certain foreign influences notably the media such as television. It is, therefore, urgently necessary for the Universities to make great efforts and devise ways through which the youth of this country can get what we seniors were gifted with i.e. the teachings of our great sages who knew how to develop self control and value virginity, chastity and prevention of promiscuity.

In India AIDS apparently got a foothold in Tamil Nadu. I would not be surprised if through efforts of dynamic Vice-Chancellors of Tamil Nadu such as Prof. Muthukkaruppan, courses of instruction are developed in South Indian Universities with the help of famous film Directors such as Mani Ratnam and music directors such as Rehman such that Tamil Nadu will be in a position to claim that they were the originators of the academic movement to stem the spread AIDS through the practice of time-honoured Indian traditions that taught us the methods of self-control.

MAJOR ECONOMIC

Gross Domestic Saving (per cent of GDP)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia									
Bangladesh	2.1	2.6	3.9	5.6	6.4	8.4	6.8	5.8	7.2
Bhutan	14.0	22.2	21.7	26.5	31.2	36.7	36.0	...	...
India	21.2	23.6	22.8	21.2	21.4	24.4	22.5	22.5	23.0
Maldives	...	...	...	...	...	...	...	...	.
Nepal	10.4	7.9	9.6	10.8	11.6	12.4	10.3	10.0	10.6
Pakistan	8.7	11.8	12.7	17.0	14.6	16.8	15.8	16.0	16.5
Sri Lanka	14.6	15.5	11.5	12.9	14.1	14.4	15.9	15.9	15.9

Gross Domestic Investment (per cent of GDP)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia									
Bangladesh	13.1	12.2	11.0	11.5	13.2	14.3	14.8	14.0	15.5
Bhutan	37.6	33.2	31.1	45.9	43.8	51.8	54.5	..	
India	22.4	27.0	23.4	23.1	21.6	25.2	24.0	24.5	25.0
Maldives	...	.	...	.	...	...	..	...	
Nepal	19.4	18.4	20.8	21.2	21.2	20.5	20.2	22.1	23.4
Pakistan	18.7	18.9	19.0	20.1	20.7	19.5	19.1	19.3	20.6
Sri Lanka	24.7	21.9	21.7	22.2	23.6	26.3	25.7	24.9	25.2

Changes in Consumer Prices (per cent per annum)

	Average 1981-1990	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	8.8	9.2	13.2	11.0	6.5	10.0	9.8	9.5	8.3
Bangladesh	10.7	8.1	7.2	4.3	0.0	3.6	8.9	8.8	6.0
Bhutan	9.2	10.0	12.3	12.7	8.9	8.2	8.6	...	...
India	8.8	8.9	13.9	11.8	6.4	10.2	9.5	9.0	8.0
Maldives	6.8	3.6	14.7	16.8	20.2	16.5	7.7	...	...
Nepal	10.2	8.3	15.6	17.1	7.5	8.9	7.6	7.0	7.0
Pakistan	7.0	9.1	11.8	9.5	9.4	12.5	12.9	13.0	11.0
Sri Lanka	12.4	21.5	12.2	11.4	11.7	8.4	7.7	9.6	9.7

DICATORS : SAARC Countries - II

Changes in Money Supply (M2) (per cent per annum)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia								
Bangladesh	16.9	12.1	14.1	10.6	15.4	16.0	16.2	15.0
Bhutan	10.5	29.6	13.5	23.1	22.6	29.9	...	...
India	15.1	19.3	15.7	18.4	21.2	15.6	15.0	15.0
Maldives	18.7	24.9	12.9	36.4	24.2	...	...	...
Nepal	18.6	19.5	21.1	27.7	19.6	14.8	12.0	13.7
Pakistan	12.6	16.3	30.3	18.0	16.9	16.6	15.0	16.0
Sri Lanka	19.1	23.2	16.6	23.5	19.6	13.5	17.0	17.0

Growth Rate of Merchandise Exports (per cent per annum)

	1994 Exports (f.o.b.in $ million)	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	41,184	11.6	3.6	7.9	18.4	16.6	17.7	16.4	14.2
Bangladesh	2,935	28.2	1.0	24.2	21.3	15.3	2.4	22.6	15.2
Bhutan	67	-11.9	7.9	-9.6	4.9	1.0	6.0	...	...
India	26,763	9.0	-1.1	3.3	20.3	17.9	21.1	18.0	15.0
Maldives	75	13.3	1.9	-13.7	-24.7	...	-1.9	..	..
Nepal	369	35.2	26.0	37.1	5.5	-7.1	-10.0	-5.0	7.5
Pakistan	7,774	12.2	18.6	7.8	-1.8	15.0	13.4	13.0	13.4
Sri Lanka	3,202	23.1	8.1	14.9	21.0	14.9	20.3	11.0	12.0

Direction of Exports (per cent share)

To	DMCs		Japan		US		EU		Australia/ New Zealand		Others	
From	1985	1994	1985	1994	1985	1994	1985	1994	1985	1994	1985	1994
South Asia												
Bangladesh	14.5	9.6	7.2	2.6	18.1	34.0	13.0	36.7	1.8	0.7	45.5	16.4
Bhutan	...	...	...	..	...	..	...	...	...	...	...	...
India	8.9	19.2	11.1	8.0	18.9	19.3	16.7	22.6	1.4	1.5	43.0	29.5
Maldives	50.8	38.7	10.1	5.2	24.3	18.0	4.0	36.1	...	...	10.9	2.0
Nepal	41.4	4.9	0.7	0.8	35.3	33.8	20.3	49.6	0.1	0.3	2.3	10.7
Pakistan	16.0	18.2	11.3	7.3	10.0	15.8	20.9	28.3	1.1	1.9	40.6	28.6
Sri Lanka	11.2	6.2	5.1	5.2	22.3	32.4	17.9	26.6	1.7	1.3	41.9	28.4

Source: Asian Development Outlook 1996 & 1997, Asian Development Bank 1996.

Modern Trends in Medical Education

A coordinated effort by teaching institutions and the Medical Council of India (MCI) was the need of the hour for the all-round development of medical education in the country, said Dr. Ketan Desai, President, Medical Council of India He was speaking on "Modern Trends and Development in Medical Education" at the Tamil Nadu Dr. MGR Medical University in Chennai recently. He said the purpose of education, as per the current trend, should be to de-emphasise teaching and stimulate learning. The atmosphere should be conducive to the students' active participation in the teaching process.

The problem-based and learner-oriented education would stimulate the faculties of the students and help them develop communicative skills besides developing confidence

Many of medical teachers at present were 'unresourceful, unimaginative and unenthused' They should be either brought 'up to the mark' or dispensed with 'ruthlessly', he said

Dr. Desai suggested that all newly-appointed teachers who had no prior experience in teaching should be sent for orientation courses. They should also attend re-orientation courses every two years to keep themselves abreast of the developments in medical science.

The teachers' competence should be evaluated periodically, the president said. Anonymous assessments by students could be employed for this purpose. On continuing medical education, Dr Desai said there should be practical programmes to improve technical skills.

The present system of assessment of students was 'far too crude' and needed to be replaced by a more 'reliable, objective and accurate' method. One of the alternatives could be a 'continuous internal assessment'.

Dr (Maj) D Raja, Vice-Chancellor, Dr. MGR University, conferred a 'Honorary Visiting Professorship' on Dr Desai.

Education and Social Diversity

A symposium on "The Challenges of Higher Education" was organised by the Ford Foundation at the India International Centre in New Delhi recently. Addressing the symposium, Justice P N Bhagwati, former Chief Justice of India, said, "diversity is central to human being, but it is also a source of strength if one develops a way to understand as to what lies beneath this diversity. A broad and liberal perspective and tolerance of others' beliefs is necessary for developing an understanding of diversity".

On the role of higher education in understanding societal diversity, Justice Bhagwati said, "Students should be educated to see that beneath diversity humanity is the thing which is common. So, students should help in bringing attitudinal changes. They should be sent to those denied of justice and to different cultures to have cross-cultural understanding".

Dr. M.A. Verghese, Vice-Chancellor of Shrimati Nathibai Damodar Thackersay Women's University, Mumbai, said, "In an open society, higher education helps in upward social mobility".

She said the Indian society was stratified, hierarchical and deficient in vertical mobility Despite diversity, India had been able to have a secular Constitution. However, "our education system, being urban-based, has created barriers So, the role of higher education is to help in understanding the inequality and human personality"

"It is the need of hour that our education policy be designed to promote social inclusion in order to train students", she said

Course in Global Business

The Faculty of Management Studies (FMS) of Delhi University proposes to start a two-year Global Business Management course from the coming academic year

This will be a unique programme as it will cover three areas — Europe, Asia Pacific and America. The Faculty of Management Studies will tie up with a university of each area to facilitate students' training abroad. There will be around 40 seats in the course and the fee structure will be reasonable as compared to other courses run by private organisations.

Prof. A.S. Narang, Dean, Faculty of Management Studies, said, "In the context of the integration of the world economy the need was felt to design a programme to cater to needs of global business management".

The objective of the programme is to "prepare managers to take up responsible positions in the management of global business".

FMS is also reported to have signed an agreement with Sanwa Bank Foundation of Japan, the fifth largest private multi-national bank, to give ten scholarships to the students of the course. The amount of the scholarship is $ 400 to each student. This scholarship has already been given to five students of the first year and five to the second year for 1996-97. Prof. Narang said the scholarship was being given on merit basis. "We are negotiating with Pepsi, Nestle and CitiBank to give more scholarships to students".

Panel Proposes Education Cess

State governments should consider levying an education cess so as to raise revenues and augment their resources for education and improving facilities in schools. This is reported to have been suggested by a high-level committee of state education ministers.

This recommendation came in the light of the committee's estimate that an additional Rs. 40,000 crores would be required to implement the proposal to amend the Constitution as to make free and compulsory elementary education a fundamental right.

The committee, headed by minister of state for human resource development, Mr. Muhi Ram Saikia, presented its report to the government in New Delhi recently.

The committee comprising education ministers from 13 states also suggested that an explicit provision be made in the Constitution to make it a fundamental duty of every citizen who is a parent to provide opportunities for education of all children upto 14 years.

The committee was constituted by the human resource development ministry to examine and consider the legal, academic, administrative and financial implications of the proposal to amend the Constitution to make the right to free and compulsory elementary education a fundamental right.

Since education was a state subject, the report said there was no need to enact a central legislation making elementary education compulsory. Instead states should either amend their existing legislation or else the centre should issue guidelines providing a broad framework for enactment of fresh legislation on compulsory elementary education.

Tezpur Varsity Campus Inaugurated

Sri S.R. Bommai, Union Minister for Human Resource Development, recently inaugurated the newly built campus of Tezpur University at Napaam. Speaking on the occasion, Sri Bommai frankly admitted that universities were built not by the government alone, but depended upon the contributions from industry, trade and commerce, voluntary organisations and affluent members of the society. He appealed to the tea sector to levy a cess for promotion of education in their region and also urged upon the oil and other sectors to contribute in this direction.

Sri Muhiram Saikia, Union Minister of State for Human Resource Development (Education) in his address opined that education should be meaningful and purposeful and must play a dual role of liberalising as well as harmonising. Nation building, he said, should be the central item in the agenda of every student.

Sri Thaneswar Boro, Minister of Higher Education, Assam, who presided, expressed gratitude to the Union Minister on behalf of the State government for his assurance of help to the University and urged upon him to make necessary funds available to the University. Sri Boro also released the souvenir published to mark the occasion.

Dr. K.M. Pathak, Vice-Chancellor, read out the message of the Chief Minister Sri P.K. Mahanta. Sri U.N. Bora, Registrar, said that enrolment of students had gone up from 45 to 114.

New Courses at Saraswathi Maha Vidyalaya

The students should be able to have a practical grasp of spoken and written Sanskrit, said the Chancellor of the Sri Chandrasekharendra Saraswathi Viswa Maha Vidyalaya, Prof. G.J.V. Jagannadha Raju. He said that the university, after launching Bachelor's courses in Sanskrit and Applied Sciences (BSAS), Ayurvedic Medicine and Surgery (BAMS), Business Administration (MBA) and Master of Computer Applications (MCA), was preparing to start Engineering (BE) courses from the ensuing academic year.

The annual intake would be 40 for Computer Science and 60 for Electrical and Electronics courses, he added.

Prof. Raju said that the Maha Vidyalaya had planned expansion along other lines also to provide a centre of excellence in medical and engineering education.

"We want to have integrated medical courses not only in ayurvedic medicine but in the modern medical and unani streams also", Prof. Raju said. Architecture and Environment Management would also be added to the list of courses.

"The university pursues its programmes with the mission that Sanskrit is a source of rich treasure of knowledge of the country's past in the arts, science and technology. The goal is to offer educational programmes combining traditional Sanskrit teaching and modern scientific education", Prof. Raju pointed out.

As part of its endeavour, the university has opened a library with a 5,000 strong collection of rare and ancient palm leaves, microfilmed and preserved in air-conditioned environs. There are nearly 75,000 books, including rare volumes on vedas and *shastras*.

CALIBER-97

CALIBER-97 on IT Applications in Academic Libraries in India : With Emphasis on Network Services & Information Sharing scheduled to be held at Patiala on 27 Feb - 1 March, 1997 would now be held on March 6-8, 1997. The convention is being organised by the Information and Library Network Centre (INFLIBNET) of University Grants Commission, in collaboration with Thapar Institute of Engineering & Technology, Patiala.

The objectives of CALIBER-97 are : (1) to exchange experiences and discuss issues and problems involved in automation of libraries; (2) to promote development of indigenous database; (3) to identify network services for libraries; (4) to suggest suitable means for resource sharing and document delivery; and (5) to promote upskilling of library professionals into information professionals.

The topics proposed to be discussed include (i) Library Automation : Status, Problems and Future; (ii) Development and Evaluation of Indigenous Databases; (iii) Network Services for Libraries; (iv) INTERNET for Libraries; (v) Organisation for Resource sharing; and (vi) Education and Training of Information Professionals.

Further details may be obtained from Dr. Janak Raj, University Librarian & Organising Secretary, CALIBER-97, Thapar Institute of Engineering & Technology, Patiala - 147 001 or Shri S.M. Salgar, Convenor, CALIBER-97, INFLIBNET Centre, P.B. No. 4116, Navarangpura, Ahmedabad-380 009.

PU Library Modernised

The Panjab University Library, Chandigarh, has a fabulous collection consisting of manuscripts, periodicals going back to 19th century, and reference books of post-1947 period. Recently with the grant of Rs. 50 lacs by the University Grants Commission, the Library has acquired latest series of computers.

Under the automation programme, the Library has acquired Intel-based Pentium Main Server, running under SCO-UNIXware Operating System, supported by fifteen 486 DX2 nodes, a pentium machine running under LINUX operating system for E-Mail and Internet connectivity and CD-Net Integrated System Server. All the machines are interconnected on high speed LAN. The Library has opted for Basis Plus based Techlib Library management software. Introduction of bar-coding system and multi-media facility are next on its agenda.

IUCAA Research Scholarships 1997

Inter-University Centre for Astronomy and Astrophysics (IUCAA) invites applications for its graduate school leading to a Ph.D. degree in Astronomy and Astrophysics. Selection for the academic year 1997-98 will be made on the basis of a written test and interviews to be held in Pune in the first week of July 1997. The academic programme will commence in August 1997.

Selected students will undergo graduate courses in physics, astronomy and related areas for two semesters. Satisfactory completion of the courses will allow students to register for a Ph.D. programme. The graduate courses will be organised in collaboration with the National Centre for Radio Astrophysics (NCRA) of the Tata Institute of Fundamental Research (TIFR), Pune. The total duration of the Ph.D. programme, including the graduate school, will be 4 years.

Students with M.Sc. (physics/applied mathematics/astronomy/electronics) or Bachelor's or

Master's degree in engineering or technology with adequate background in physics and mathematics are eligible to apply. Candidates with an engineering or technology background and interest in experimental physics are also encouraged to apply. Candidates expecting to obtain their degrees by July 1997 may also apply. All selected candidates will be required to clear the UGC-CSIR NET examination within one year of admission to the research programme, if they have not already done so.

Further details may be obtained from the Coordinator, Core Programmes, IUCAA, Post Bag 4, Ganeshkhind, Pune-411 007. The last date for receipt of applications is April 1, 1997.

News from AIU

Indo-German Academic Cooperation

The Association of Indian Universities (AIU) and the Association of Higher Education institutions in the Federal Republic of Germany (HRK) signed on 3rd February, 1997 a Memorandum of Understanding (MoU) to promote academic cooperation between India and Germany. The MoU provides for cooperation in the areas of study, teaching and research through admission of advanced students, particularly those pursuing doctoral studies and research; exchanging faculty and scholars; and promotion of joint research projects. The cooperation can be extended to member institutions of both the Associations. Full use is sought to be made of the support programmes offered by national and international agencies including those of the South Asian Association for Regional Cooperation (SAARC) and the European Union (EU) in the fields of teaching and research. HRK and AIU shall also ensure the cooperation of governmental bodies and agencies active in and responsible for Indo-German cooperation in the interest of linking programmes and activities in the context of bilateral governmental agreements. This will also apply to non-governmental agencies and their programmes especially those of the German Academic Exchange Service (DAAD) and the Alexander von Humboldt-Foundation (AvH) on the German side, and the University Grants Commission (UGC), the Council of Scientific and Industrial Research (CSIR) and the Indian Council for Cultural Relations (ICCR) in India.

The MoU was signed by Prof. iur. Hans-Uwe Erichsen, President HRK and Prof. K B Powar, Secretary General, AIU.

Prof Erichsen hoped that this new instrument will help augment inflow for Indian Scholars into Germany which had of late slowed down. Prof N C Nigam, President AIU, referred to the traditional cultural ties between India and Germany and appreciated German assistance in the setting up of Indian Institute of Technology, Kanpur. He also applauded the role of German Academic Exchange Service (DAAD) and the Humboldt-Foundation in promoting studies by Indian Scholars at German Institutions by providing fellowships and scholarships. He hoped that this memorandum of understanding would usher in a new era in Indo-German academic cooperation.

We Congratulate ...

Dr. K.P.A. Menon who has taken over as Chancellor of the Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeeth (Deemed University), New Delhi.

News from UGC

Countrywide Classroom Programme

Between 15th and 21st February, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

15.2.97

"Statistics-I"

"Beyond Green Pastures-III : A World of Rural Non-farm Sector"

"Advocacy : A Tool for Social Change"

16.2.97

"Theatre Architecture - VI: Modern Sanskrit Theatre Phase III & IV"

"First Aid for Roadside Accidents"

"The Art of Papier Mache"

18.2.97

"Physics-II"

"Different Strokes"

"Domestic Dogs-II"

20.2.97

"Wild Memories-II"
"Geo-How the Earth came into being"

IInd Transmission

1.00 p.m. to 2.00 p.m.

15.2.97

"Understanding Cinema-*IV* : Camera Movement"
"Family Series : Portraits of Genesia - II"
"Colour"

16.2.97

No Telecast

17.2.97

"Question Time"
"Agro-Forestry : A New Art in Agriculture"

18.2.97

"Integral Pedagogy Process - III : Experience"
"An eastheseologist and Neuro Surgery"
"Waste Management"

19.2.97

"Impact of Power Generation"
"Sitamau : A Repository of Indian Heritage"
"Transposition in Bio-Engineering"

20.2.97

"History of Telecommunication : Telephony"
"Literature in Society Renaissance-II : View of Man"
"Hidden in Rocks"

21.2.97

"Youth and Democratic Values-I"
"Nandan Mela"
"Developing Interpersonal Relationship through Communication-II"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

17.2.97

"राग संगीत - V : बागेशरी"

19.2.97

"शक्ति उदय"

21.2.97

"बोरूंडा ज्ञान प्रथा"

News from Abroad

Remote Sensing Workshop

The GIS Application Centre (GAC) of the Asian Institute of Technology, Bangkok proposes to organise a Workshop on Microwave Remote Sensing on 7-11 April, 1997. The workshop in designed to introduce participants to the principles of satellite and airborne radar remote sensing and to a set of applications in various aspects of natural resources. Image processing and analysis will be highlighted through actual computer hands-on sessions and a one-day field trip to the study area.

The objectives are : (1) to provide theoretical fundamentals on Microwave Remote Sensing and an overview of its geophysical applications; (2) to identify priorities, needs and techniques involved in microwave remote sensing applications in natural resources and environment-related fields; and (3) to stimulate education and information exchange among the participants.

The course contents include : Microwave remote Sensing — Overview; Radar remote Sensing; Data handling; Pre-processing; Filtering; Introduction to Digital Image Processing; SAR Image Statistics and Filtering; Introduction to Radar, satellite products, RADARSAT, ERS1, JERS-1; Computer Exercises in SAR/VIR complementary for Landuse/Landcover Discrimination; Use of multisensors/Multidate SAR Data; Methods of SAR Ground Truthing; Outline of Applications; Agriculture, forestry disasters, marine etc; SAR Exercises on Filtering, Texture and segmentation based on Field Trip information.

Further details may be obtained from Mr. Shanker Raj Pathak, Manager & Program Specialist I, GIS Application Centre (GAC), STAR Program, SERD, AIT, G.P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand.

Award for Innovation in Higher Education

Nikolai N. Khaladjan International Award for Innovation in Higher Education is an annual award to recognize innovation and achievement in higher education worldwide. The award itself is a silver academic medal to be presented at the annual National Assembly of the American Association of University Administrators (AAUA). The first award will be made at the next assembly, June 28 to July 1, 1997, in Denver, Colorado.

Nikolai N. Khaladjan is the founder and president of Moscow External University of the Humanities (MEUH). From its beginning in 1991, it has become with its affiliated institutions the largest higher education institution in

Russia, with over one hundred thousand students enrolled in independent learning or distance education. MEUH is united by a common educational method which concentrates on student-centred and student-directed learning.

Any higher education institution in the world is eligible to compete for this award but the sponsors of the award are especially interested in recognising : innovative teaching and learning methods, methods which widen access to education, extension of or more efficient use of teaching resources, wide use of or development of learning technology, and efforts that accelerate or deepen student learning.

The award will be given to the nomination judged the most innovative and having the widest potential for application or impact on post-secondary education.

Institutions may be nominated by their own officials or by their students, third parties, organizations, vendors, public officials, or learned societies.

4 copies of a 5 to 7 page (1250 to 1800 word) summary may be submitted under the following headings : ***Background*** : basic facts, description of the institution, location, mission; ***Nature of the Innovation*** : as specific as possible about number of students/faculty/staff involved; resources involved; measurable outcomes or achievements; administration of the activity, revenues/expenses if appropriate; charts, tables, and graphics all acceptable; ***Potential Impact*** : possibility for adoption in other environments, spin-off projects, other possible adaptations or models.

Include the name, title, and contact information for at least one reference, an individual not directly employed by the institution who can be informative about the nature and outcomes of the innovation. This individual could be a consultant, a representative of an allied institution, a community or business leader, an educational ministry or accreditation officer, or an expert who can be objective about the innovation.

All submissions must be in English, regardless of the language of instruction and should be submitted by March 17, 1997 to : Jerome L. Neuner, AAUA International Liaison Chair, Canisius College, 2001 Main Street, Buffalo, NY 14208, USA.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
March 6-8, 1997	CALIBER-97	Theme : IT Applications in Academic Libraries in India : With Emphasis on Network Services and Information Sharing	INFLIBNET and Thapr Institute of Engineering and Technology, Patiala	S.M. Salgar, INFLIBNET Centre, P.B. No. 4116, Navrangpura, Ahmedabad-380 009 OR Prof. Janak Raj, University Librarian, Thapar Instt. of Engineering and Technology, Patiala-147 001.
March 13-15, 1997	Restructuring of Public Enterprises at State Level	To provide an approach to initiate plans of action to restructure State Level Public Enterprises [SLPEs].	School of Management, Pondicherry University, Pondicherry	Dr. R. Prabhakara Raya, Workshop Coordinator, School of Management, Pondicherry University, Pondicherry-605 014
July 23-25, 1997	International Seminar on Researches in Teacher Empowerment and School Effectiveness at the Primary Stage	Theme : Teacher Empowerment and School Effectiveness	National Council of Educational Research and Training, New Delhi	Dr. Ved Prakash Prof & Head, DPEPCRG, NCERT, Sri Aurobindo Marg, New Delhi-110 016

UNIVERSITY OF DELHI

(FACULTY OF TECHNOLOGY)

ADMISSION NOTICE - 1997

The University of Delhi will hold a **Combined Entrance Examination** (CEE) for admission to First Semester of Bachelor of Engineering Courses for the session 1997-98 in Delhi College of Engineering and Delhi Institute of Technology on **Sunday, the 18th May, 1997**.

1. **Course and number of seats offered :**

   DELHI COLLEGE OF ENGINEERING (DCE)

   Electronics & Communication Engg. 40, Electrical Engg. 70, Mechanical Engg. 100, Civil Engg. 70, Production & Industrial Engg. 20, Computer Engg-20.

   DELHI INSTITUTE OF TECHNOLOGY (DIT)

   Electronics & Communication Engg-45, Computer Engg.-45, Instrumentation & Control Engg -45, Manufacturing Process & Automation Engg.-20.

2. **Minimum Eligibility** : The candidates having Indian nationality should have passed Senior School Certificate Examination (12 year course) conducted by Central Board of Secondary Education or any other examination recognized as equivalent thereto by the University of Delhi securing 60% or more marks in the aggregate of Physics, Chemistry and Mathematics (50% or more marks for candidates belonging to SC/ST category). The candidates who are appearing in the qualifying examination are also eligible to apply for the CEE-97.

3. **Region-wise allocation of seats :**

   i) Delhi region (the candidates passing from schools : 85% located in the National Capital Territory of Delhi);

   ii) Outside Delhi Region (*the candidates passing from : 15% schools/colleges located outside the National Capital* Territory of Delhi).

4. i) **Reservation of seats** : 15% seats for Scheduled Casts and 7.5% seats for Scheduled Tribes of the total seats in each Institution.

   ii) *5% of total seats under Category 3 (i) in each course for Children/Widows of Personnel of Armed/Para Military* Forces killed/ disabled in action during the hostilities are provided and are exempted from appearing in CEE. Such candidates can also appear in CEE in their own interest as general candidate.

5. **Examination** : The Combined Entrance Examination consists of objective type questions in Physics, Chemistry and Mathematics (Combined).

6. **Minimum Age** : 17 years on or before **1st October, 1997**.

7. **Bulletin of Information** : The Bulletin of Information containing further details, prescribed application form and syllabi for CEE-97 can be obtained by post by sending a crossed **Demand Draft of Rs. 230/- (inclusive of examination fee) in favour of the Registrar, Delhi University, Delhi, drawn on State Bank of India, Service Branch, New Delhi (Code No. 7687)**. The request for supply of Bulletin of Information by post should be sent to the **Assistant Registrar, Faculty of Technology, Mechanical Engineering Block, Delhi College of Engineering, Kashmere Gate, Delhi-110006** alongwith a self addressed envelope (size 25 cm x 17 cm unstamped) and bank draft of Rs 230/-

   The Bulletin of Information can also be collected from the sale counter of the **Faculty of Technology, Mechanical Engineering Block, Delhi College of Engineering, Kashmere Gate, Delhi-110006 on submission of a crossed Demand Draft of Rs. 220/-** *(inclusive of examination fee) in favour of the Registrar, Delhi University, Delhi, drawn on* State Bank of India, Service Branch, New Delhi (Code No. 7687) on working days from Monday to Friday between 10.00 A.M. to 4:00 P.M.

   Please write your name and address at the back of the crossed Demand Draft.

   The candidates are advised to note that no other mode of payment i.e. cash/money order would be acceptable. In their own interest, the candidates should ensure that the Demand Draft conforms to the details indicated above, failing which it may not be accepted.

8. **Important Dates :**

   i) Sale of Bulletin of Information: w.e.f. 25.02.1997 to 27.03.1997

   ii) Last date for receipt of request for supply of Bulletin by post : 19.03.1997

   iii) Last date for receipt of completed application form: 27.03.1997

NOTE:

i) *Date of declaration of CEE 97 result : 4 to 5 weeks after conduct of CEE-97.*

ii) Centres of examination are located in the National Capital Territory of Delhi only.

The completed application form should be sent to the **Assistant Registrar, Faculty of Technology (University of Delhi), Mechanical Engineering Block, Delhi College of Engineering, Kashmere Gate, Delhi-110006.**

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED.

K.K. PANDA
REGISTRAR

DELHI : 27th January, 1997

Rethinking Teacher Education

Mohd Miyan*

Curriculum Framework for Teacher Education - Discussion Document. New Delhi, National Council for Teacher Education, 1996. Pp. xvi+72.

Curriculum Framework for Teacher Education — A Discussion Document, has been brought out by the National Council for Teacher Education. The main purpose of bringing out this document is to generate nation-wide thinking and elicit suggestions from those concerned about teacher education so as to evolve a consensus for the framework for teacher education curriculum. The document is divided into eight chapters covering the context in which teacher preparation could be viewed, pre-service teacher education curriculum, in-service teacher education, curriculum transaction, teacher preparation for alternative systems/approaches in education, preparation of teachers for students with special needs, physical education, and education of teacher educators. The context encompasses various aspects like nation's commitment, plurality of Indian society and culture, social justice, homogeneity of curriculum, critical comment on the present curriculum, need for research, implementation of innovations, relationship of theory and practice, teacher's role in community development and thus advancing a justification for a fresh look at the teacher education curriculum so teacher could be prepared for functioning taking cognisance of advancements expected in the 21st century and with a well informed set of learners; the chapter ends with the pinpointing of gaps and formulations of critical concerns. In the sections philosophy of equality and philosophy of social justice reference is made to empowerment of women and downtrodden groups like SCs/STs and OBCs. It needs also to include the special characteristics and needs of educationally backward minority communities. Sections 1.17: Teachers for the 21st century and 1.23 : Facing the Challenges of Science and Technology may be combined as the thrusts of these sections are the same. Certain assumptions are made by the authors about the Indian society and teacher education curriculum, entry qualifications and duration of the course. In my opinion, the authors need to review these. For example, under critical concerns it states "In case the duration of the programme is increased, the training inputs including the content will also need enrichment". It should in fact be the other way round, that is, if there is need for enrichment of content due to advancement or due to new thrusts in school education, the duration of the course may accordingly be decided. The number of sections in this chapter (which are 33) could be reduced to one third of their present number by combining several of the related ones thus sharpening their focus.

The teacher profile is determined by what roles she/he plays in the school and the community. There are variations in his/her roles from stage to stage, therefore, specific objectives and curriculum for different stages would have different thrusts. For example a primary school teacher generally all subjects including physical education and organises co-curricular activities while a teacher at secondary level teaches two subjects and shoulders some administrative responsibility. At secondary level there are separate teachers for fine arts and physical education and so on. This aspect needs a very careful consideration. This will be one of the basis of my observations on the other chapters. The chapter on pre-service teacher education curriculum deals with general and specific objectives of teacher education at various levels. It also suggests a curriculum framework. Though the teacher preparation for vocational subjects is included, areas like music, art, painting, dance have not been given due attention. Somewhere in this chapter it is stated "In addition to formal system, it needs teachers for physical education, music, art, painting, dance, SUPW and vocational subjects...." which implies that these areas are not part of formal system. It needs reconsideration. A complete

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Department of Foundations of Education, Faculty of Education, Jamia Millia Islamia, New Delhi-110 025.

chapter has been devoted to the preparation of a physical education teacher. The way it is discussed gives the reader an impression that a one year B.Ed. like course is being suggested. The fact of the situation is different. In the area of physical education Diploma, B.P.Ed. and M.P.Ed. courses etc are offered which are *of varying duration and are also* hierarchical in nature. It necessitates further deliberations so that the teacher preparation for physical education could be placed in proper perspective.

A distinction between streams and modes of curriculum transaction becomes necessary so as to give proper focus to those in teacher preparation. Drawing from the second chapter "....and teacher functionaries for non-formal stream like distance education, correspondence, adult education, open learning system ..." and considering chapter five on teacher preparation for alternative systems/approaches in education, one desires that these two aspects viz, Alternative Systems and Alternative Approaches, should be dealt with in separate chapters.

As regards the preparation of teachers for students with special needs, which constitutes chapter 6, the prevailing situation in the country's schools should provide a background. There are special schools offering a programme for specific disability and there may also be some dealing with a variety of children's multiple disabilities/handicaps. Status of integrated schools needs further consideration. The preparation of teachers for integrated schools and special schools would require, to a great extent different training. Hence while revising this chapter there is need to view the requirements of special schools and integrated schools. Learners with exceptional abilities should also get consideration in the general curriculum.

The introduction to the chapter on curriculum transaction rightly enumerates the components of the curriculum. The interrelationship and dependence would be worthwhile to highlight those aspects where gaps are perceived and often known to exist, for instance the prerequisites of practice teaching are elaborated but the concern for duration and phasing is conspicuous by its absence. In fact even the timing particularly its commencement must not be lost sight of as several factors, the chief among them the availability of cooperating schools implies teacher training institutions to complete the prerequisites at a rate far too rapid for the student teachers to assimilate.

Strangely, supervision of the practical work other than classroom instruction is felt should be jointly supervised by the teacher educator and the school teacher but the role of the teacher educator during practice teaching is not so definitely outlined giving the impression that the responsibility would be on the school teacher. Is that always feasible ?

Then the specific stages of school education having varying objectives and thrusts necessitates varying modes of planning and transacting the relevant teacher education programme. As illustration : (i) The nursery and pre-school teacher training needs to prepare student teachers to take on the entire responsibility of a group of children; the programme is expected to provide for all aspects of development of the group and of individual learners, hence the need of varying types of activities each day with scope for individual children to work at their own pace. *Evaluating such a school* programme necessitates the framework reflect on the comprehensive planning for student teaching so that each student-teacher, initially a group of 2-3, plan and implement the entire day's programme with one activity linked to another. (ii) Since a primary teacher is expected to teach all subjects to a group, the section on practice teaching needs to highlight the planning and teaching of lessons across subjects for the same group.

In-service teacher education may be divided into two parts : (i) for those teachers who have not had pre-service teacher education. Such in-service education may also lead to the award of certificate/diploma/degree in teacher education and even of additive nature. (ii) Continuing education for upgrading knowledge *and skill and also acquisition of* higher degrees which could be helpful in upward mobility. The chapter on In-service Teacher Education covers wide ranging related aspects. While enumerating major milestones in the field of in-service teacher education, the document fails so mention the outcome of NPE(1986) in the form of IASEs and DIETs. These institutions termed as 'bimodel' in the document, are delivering both pre-service and in-service courses. Steps for quality assurance and indicators of performance need to be specifically articulated so that proper planning and conduct of such programmes could be ensured. When considering the in-service education of administrative staff (p.39), UGC's efforts through "Management Development Programme" and "O & M" sections in the university setup may also be taken into consideration. An important aspect — the orientation/training of resource persons need sharpening of focus. The assertation made in the document that "When in-service education is contextualised within the social reality of the educational world, it is seen that the training is imparted in a slipshod manner and trainees react to it with apathy and indifference" (p.36) needs research support.

Teacher educators are not only responsible for educating pupil-teachers, they are also engaged in conducting research, implementing innovations and planning and organising in-service education programmes. The pre-service education of teacher educators calls for serious deliberations; this has been discussed in chapter 8 of the document. At present there is hardly any such provision in the country. Efforts should be made to provide facilities in various Departments of Education/IASEs for pre-service training of teacher educators at various levels. For in-service education, IASEs and Academic Staff Colleges should be strengthened by spelling out academic inputs. The document needs to suggest specific academic inputs for both pre-service and in-service education for teacher educators.

The NCTE has already brought out a document on entry qualifications for various levels of teacher education programmes. If these qualifications also find a place in the curriculum framework. It would further help in deciding the content of the course. The discussion documents has already generated a debate in the country, reactions and suggestions of experts would go a long way in making the curriculum framework for teacher education functional.

TATA INSTITUTE OF SOCIAL SCIENCES
(A Deemed University)
Post Box No. 8313, Deonar, Mumbai - 400088

ANNOUNCES ADMISSION TO THE FOLLOWING ACADEMIC PROGRAMMES 1997-98

i) Master of Health Administration (M.H.A.)
ii) Master of Hospital Administration (M.H.A.)

Eligibility: A first Bachelor's degree (under 10+2+3 or 10+2+4 or 10+2+2+1 year bridge course, pattern of study) in any discipline with a minimum aggregate marks of 50% (40% for SC/ST). Age under 45 years, relaxable only under special circumstances. Preference will be given to person/s holding administrative position in health sector.

Brochure and Application Form: *The cost of prescribed application* form with information brochure for the M.H.A. programmes, per form, is Rs.150/-. *Request letter for application form with brochure* should be addressed to Assistant Registrar (Academic) of the Institute with *(i) a demand draft drawn in favour of* **TATA INSTITUTE OF SOCIAL SCIENCES, Mumbai**, towards cost of application form *with brochure (Non Refundable) and (ii) self-addressed envelope* (20 c.m. x 26 c.m.) with postal stamps worth Rs.6/- The cover containing request letter for application form must be subscribed with the title of the programme

Cash Timings : *Monday to Friday 10.30 a.m. to 1.00 p.m. and 1.30* p.m. to 2.00 p.m. Saturday 10.30 a.m. to 11.30 a.m.

Reservation of Seats for SC/ST : 15% and 7½% of seats reserved in all the programmes for SC/ST candidates respectively.

Free Application Forms will be provided to those SC/ST candidates who are unemployed and whose parent's/guardian's yearly income is Rs 44,500/- or below in the financial year 1995/96. Such SC/ST candidates need to submit a true copy of Caste/Tribe Certificate and the Income Certificate (Monthly or Yearly) of their parents/ guardians issued by a Village Revenue Officer, Tahsildar or the employer alongwith a self addressed envelope (20 c.m. x 26 c.m.) with postal stamps worth Rs.6/-.

Last date for issuing application forms by post : 21.3.1997.
Last date for receipt of completed applications : 28.3.1997.

(ii) In respect of applications received only by post from the candidates residing in remote areas/regions (Assam, Meghalaya, Arunachal Pradesh, Mizoram, Manipur, Nagaland, Tripura, Sikkim, Jammu & Kashmir, Lahaul, and Spiti District and Pangi Sub-division of Chamba District of Himachal Pradesh, Andaman and Nicobar Islands or Lakshadweep) or Abroad. **The last date is 04.4.1997.**

Foreign Students : 5% of the seats are reserved in the M.H.A. programmes.

Hostel : Limited number of seats available for men and women students.

Scholarships : Some scholarships on Need-cum-merit and some on Merit-cum-need basis are available.

The tests will be held at the Institute only in June 1997. For further details regarding admission procedure, dates of tests, fees etc., please refer to the brochure or write to the **Assistant Registrar (Academic)** or contact on **phone No. 556 3289 to 96. Fax 22-556 2912.**

NEW ACADEMIC SESSION COMMENCES ON MONDAY, JUNE 30, 1997.

Mumbai **Dr. S.K. Bandyopadhyay**
Date: 3.2.97 *REGISTRAR*

INDIAN STATISTICAL INSTITUTE

203 B.T. Road, Calcutta - 700035

ADMISSION NOTICE 1

SESSION : 1997-98

Applications are invited for the following programmes from candidates having qualifications as shown against each programme. Stipend as mentioned against each programme will be available for deserving candidates.

1. **3-year B.Stat (Hons)** : Successful completion 10+2 years of secondary education or equivalent with Mathematics and English. Stipend Rs. 500/- p.m.

2. **2-year M.Stat** : 3-year Bachelor's degree with Statistics or Mathematics as a full subject. Those without Statistics, but having outstanding mathematical ability, *may also be considered. Holders of Statistician's Diploma/Senior Diploma of ISI are eligible for admission to the second year of the course. Stipend Rs. 800/- p.m.*

3. **2-year Master of Science (M.S.) in Quantitative Economics** : Three year Bachelor's degree in Economics/Mathematics/Statistics/Physics. Engineering graduates are also eligible. Candidates should have knowledge of Economics and Mathematics at the B.A./B.Sc Pass level. Stipend Rs. 800/- p.m.

4. **2-year M.Tech in Computer Science:** (i) Master's degree in Mathematics/Statistics/Physics/Electronic Sciences/Computer Science/MBA/MCA or a Bachelor's degree in Engg./Tech and (ii) knowledge of Mathematics at graduate level. Stipend Rs 1800/- p.m.

5. **2-year M.Tech in Quality, Reliability and Operations Research** : (i) Master's degree in Statistics and knowledge of SQC and OR, or Bachelor's degree in Engg/Tech. and (ii) knowledge of relevant topics of Physics, Chemistry (H.S. level) and Mathematics (graduate level). Stipend Rs. 1800/- p.m

6. **Junior Research Fellowships** : (a) **Statistics, Mathematics** : (i) Master's degree in the relevant subject, or (ii) Bachelor's degree holders with Statistics/Mathematics as the main subject and having outstanding mathematical maturity may also apply.

(b) **Economics** : *(i) Master's degree in Economics, or (ii) Bachelor's degree with Economics, or (iii) Bachelor's degree with Economics as the main subject and having outstanding mathematical maturity, or (iii) Master's degree in Sociology with Mathematics/Statistics and Economics at Bachelor's level.*

(c) **Computer Science and Communication Science** : (i) MCA/M.Sc. M.A. or equivalent in Physics/Mathematics/Statistics/Electronic Sciences/Computer Science/Linguistics or (ii) M.E./M.Tech or equivalent in Electronics/Computer Science/Electrical Engineering Radiophysics

(d) **Theoretical Computer Science** : Same as for 6 (c) Candidates should also have strong mathematical ability

(e) **Geology** : Master's degree in Geology or Earth Sciences

(f) **Biochemistry** : M.Sc. in Biochemistry/Biophysics/Molecular Biology/Cell Biology

(g) **Agricultural Science**: M.Sc. in Agronomy, Agricultural Extension or Agricultural Management.

(h) **Botany** : M.Sc. in Botany or in Agricultural Botany.

(i) **Demography** : (i) Master's degree in Statistics/Bio-statistics/Mathematics with specialisation in Demography, or (ii) Master's degree in Demography/Population Sciences/Population Studies with knowledge of Mathematics/Statistics at Graduate level Stipend for (a) to (i) Rs. 2500/- p.m.

7. **2-year Specialist Development Programme in SQC and OR** : M.Sc./B.E. or equivalent with (i) Diploma in SQC and OR of the Institute or (ii) One Year's P.G. training in SQC and OR in industry with adequate applied work, Stipend as in 6

8. **1-year Certificate/2-year *Diploma Course on Operation and Programming of Automatic Data Processing Equipment*** : (i) Age below 25 years on 1.4.97 (ii) Bachelor's degree with Mathematics as a subject at Higher Secondary (10+2) level (iii) Typing speed of 25 words per minute. A tuition fee of Rs. 3000/- per year is charged for this course.

All programmes are offered in Calcutta whereas 2, 6(a) and 6(b) are offered in Delhi and Bangalore also. 3 is offered in Delhi also. The complete details are available in the prospectus. Selection of candidates is based on academic record, written tests and interviews conducted by the Institute Candidates who have been offered Junior Research Fellowships by the CSIR/NBHM may directly seek an interview at any time of the year of Fellowships listed in 6, but for programmes 4 and 5, ISI written tests and interviews are compulsory even for candidates with valid GATE or CSIR test scores.

Limited hostel facilities are available. Selection tests for the programmes will be conducted at a number of centres in India and abroad. Candidates who are due to complete the qualifying examinations before 1 July 1997 may also apply. This date may be relaxed by the Institute in case of candidates with outstanding academic record and performance in the selection tests and interviews. Prospectus and application form can be obtained from the ***Dean of Studies, Indian Statistical Institute, 203 Barrackpore Trunk Road, Calcutta-700 035**, from 10 February 1997* by paying an *amount of Rs. 80/- in case* (between 11.00 a.m. and 2.00 p.m. on working days from Monday to Friday) or by bank draft in favour of "Indian Statistical Institute" *payable at Calcutta (proper). Postal orders, money orders and* cheques will not be accepted.

Last date for receiving requests for application forms : Monday, 3 March 1997.
Last date for receiving completed application forms: Friday, 28 March 1997.
Date of selection tests: Sunday 11 May 1997.

COMMUNICATION

Improving Journalism Education

The article "Journalism Education — Need for a Fresh Outlook" (*University News*, Nov. 11) contains good suggestions for improving the course content and quality of teaching and research in Journalism Education. To these, I would like to add the following:

Realising the importance of education, training and research in Journalism, a full-fledged university — Makhan Lal Chaturvedi National University of Journalism was set up at Bhopal by Government of Madhya Pradesh in 1990-91. The University runs whole time courses at Bachelor and Master levels in the fields of Journalism, Mass Communication and Public Relations, besides in Library Science and Computer Science.

In addition, realising the future of Rural Journalism in India, where vast population even today lives in the countryside, the University is running a specially designed programme of Rural Journalism.

Even though initially the University was expected to organise courses in Hindi, later on the Governing Council of the University decided that courses in English and other vernacular languages should also be organised.

Accordingly, besides courses in English, the Journalism and Public Relations courses are going to be organised in Malayalam and Oriya.

There is emphasis on practical on-the-job training in newspapers, PSUs, corporate sector, advertising agencies and news agencies. The bachelor level students have to compulsorily undergo ten weeks' practical training for which they have to pass the examination having 100 marks. No other course has such a provision of practical training followed by examination.

I fully agree that there is dearth of competent teachers in the above mentioned areas. To cope up with such situation, the University and departments of Journalism, Mass Communication and Public Relations could commission retired persons who have made a mark in these fields — from the newspapers, *PSUs, corporate sector and* other organisations. The criteria should be proven ability and competence to impart training. Also the persons must have analytical mind and rich experience.

In USA, for instance, there is to and fro movement from industry, newspapers and field organisations to the academics and vice-versa. We can surely do so in our situation. Informatively, after retirement as General Manager, Corporate Public Relations, BHEL, I have been taken on the teaching faculty in *Makhanlal Chaturvedi National* University of Journalism. I find it rewarding, so do the students.

C.K. Sardana,
Professor and Head,
Faculty of Public Relations &
Mass Communication,
Makhanlal Chaturvedi National
University of Journalism, Bhopal.

UNIVERSITY OF DELHI

Advt. No. Estab.IV/150/97 Dated: January 28, 1997

Applications are invited on the prescribed forms for the following posts so as *to reach the **Registrar, University of Delhi**, Delhi-110 007 latest by 28.2.1997.*

S. No.	Post/ Scale of Pay	No. of Posts	Reservation, if any
*1.	**Technical Officer/ Project Officer** (Rs. 2200-75-2800-100-4000)	01	—
*2.	**Input/Output Assistant (Grade-II)** (Rs.975-25-1150-EB-30-1540)	01	Reserved for Scheduled Tribe

Ref: Advt. No. Estab. IV/95 dated June 17, 1995

Applications are also invited for the post of **Principal, School of Correspondence Courses & Continuing Education** in the scale of pay of Rs. 4500-150-5700-200-7300 with allowances and other benefits as permissible under the rules of the University which and earlier been advertised vide **Advt.No.Estab.IV/95 dated 17.06.95**. Persons who have applied earlier need not apply again but if they want to give any additional information they may do so.

1. All the above posts carry DA, CCA, HRA etc. as admissible under the rules from time to time.
2. It will be open to the University to consider names of suitable candidates who may have not applied.
3. The University reserves the right not to fill up any of the vacancies advertised without giving any reason.
4. The Relaxation of any of the qualifications may be made in exceptional cases, on the recommendations of the Selection Committee.
5. Canvassing in any form by or on behalf of the candidates will disqualify the candidates.

*6. Posts have been sanctioned under VIII Plan but likely to continue.

Application forms and other details regarding prescribed qualifications can be had from the **Establishment Branch IV (Room No. 205), New Administrative Block, University of Delhi, Delhi-110 007** on all working days from 9:30 A.M. to 12:30 P.M. and 2:00 P.M. to 5:00 P.M. either personally or by sending a self addressed stamped (worth Rs.10/- envelope size (13 cms x 28 cms) addressed to the **Registrar, University of Delhi, Delhi-110 007**.

K.K. Panda
REGISTRAR

Indira Gandhi Institute of Development Research, (IGIDR)

Project Position for Capacity Building In Environmental Decision Making

IGIDR, an advanced research institute established by the Reserve Bank of India, has taken up a United Nations Development Programme sponsored project '**Capacity Building for Introduction of Environmental Economics into Decision Making for Sustainable Development**'. The focus of the project is Economic Analysis of Air and Water Quality Management, Community Land Management, and Biodiversity. The project involves developing training materials, organising workshops and training sessions, interaction with stakeholders and decision makers, preparation of guidelines on sustainable resource management pursuing an interagency collaborative effort.

The project offers excellent opportunity to experienced and dynamic persons in **research, management and information sciences** to work in an interdisciplinary environment. Good written and oral communication skills are a basic requirement for all positions.

Position	**Duration**	**Qualification**	**Specialisation**	**Approx. Emoluments**
Senior Fellows	20 months	Ph.D.(Desirable) with 10 yrs. to 15 yrs. relevant experience	Resource Economics, Environmental Engineering, Environmental Sciences, Environmental Law, Air Pollution.	1,50,000/- p.a. (negotiable)
Consultants	1 month	Ph.D. with' 10 yrs. to 15 yrs. relevant experience	Gender Studies related to Air, water Agro Forestry related to CPLR. Cooperative Movements.	20.000/- (negotiable)

Interested persons may apply giving full details and two reference names. Those on sabbatical or study leave are also encouraged to apply. Women are strongly encouraged to apply. Accommodation will not be available.

Applications should reach **Project Office, Capacity-21, Indira Gandhi Institute of Development Research, Gen. Vaidya Marg, Goregaon (E), Mumbai-400 065, within one week** of the publication of this advertisement.

Fax: 840 2026, 840 2752, e-mail:cap21@ agni.ernet.in

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during January 1997

EDUCATIONAL PHILOSOPHY

Kratochwil, Leopolel. Montessori's educational theory : Approaches and concepts : Stimuli and limitations. **Edn**, 53, 1996, 31-52.

EDUCATIONAL PSYCHOLOGY

Straka, Gerald A and others. A model for motivated self-directed learning. **Edn** 53, 1996, 19-30.

EDUCATIONAL SOCIOLOGY

Semel, Susan F. 'Yes, but ... ' : Multiculturalism and the reduction of educational inequality. **Teachers College Record** 98(1), 1996, 153-77

EDUCATIONAL POLICY & PLANNING

Neave, Guy Higher education policy as an exercise in contemporary history. **Hr Edn** 32(4), 1996, 403-15.

EDUCATIONAL ADMINISTRATION

Ashcroft, Kate and Foreman-Peck, Lorraine. Quality standards and the reflective tutor. **Q Assurance in Edn** 4(4), 1996, 17-25.

Manley, Frank B and Forsyth, Suzanne. Human resources issues : A critical concern for CEOs **Ednl Record** 77(4), 1996, 43-7.

Waghodekar, P H and Limaye, D B. Institution's role in industry institution partnership. **J of Engg Edn** 9(4), 1996, 47-55.

CURRICULUM

Ernest, Joshua. Curriculum development in emerging technologies. **Indian J of Tech Edn** 19(4), 1996, 33-5.

TEACHERS & TEACHING

Beadie, Nancy From "teacher as decision maker" to teacher as participant in "shared decision making" : Reforming the purpose of social foundations in teacher education. **Teachers College Record** 98(1), 1996, 77-103.

Biggs, John. Enhancing teaching through constructive alignment. **Hr Edn** 32(3), 1996, 347-64.

Braxton, John M and others. The implications of teaching norms for the improvement of undergraduate education. **J of Hr Edn** 67(6), 1996, 603-25.

Ramsden, Paul and Martin, Elaine. Recognition of good university teaching . Policies from an Australian study. **Studies in Hr Edn** 21(3), 1996, 299-315.

Singer, Ellen R. Espoused teaching paradigms of college faculty. **Research in Hr Edn** 37(6), 1996, 659-79.

Su, Zhixin. Teaching, learning and reflective acting : A Dewey experiment in Chinese teacher education. **Teacher College Record** 98(1), 1996, 126-52.

Trigwell, Keith and Prosser, Michael. Changing approaches to teaching : A relational perspective. **Studies in Hr Edn** 21(3), 1996, 275-84.

EDUCATIONAL RESEARCH

Clark, Burton R. Substantive growth and innovative organisation : New categories for higher education research. **Hr Edn** 32(4), 1996, 417-30.

Hockey, John. A contractual solution to problems in the supervision of PhD degree in the UK. **Studies in Hr Edn** 21(3), 1996, 359-71.

Pearson, Margot. Professionalising PhD education to enhance the quality of the student experience. **Hr Edn** 32(3), 1996, 303-20.

EDUCATIONAL TECHNOLOGY

Chadra, Arvinda and Pandya, Rameshari. How effective are video films for imparting legal education. **Progress of Edn** 71(4), 1996, 90-2, 96.

Lieberman, Ann and Grolnick, Maureen. Networks and reforms in American education. **Teachers College Record** 98(1), 1996, 7-45.

EDUCATIONAL EVALUATION

Gibbs, Graham and others. Class size and student performance : 1984-94. **Studies in Hr Edn** 21(3), 1996, 261-73.

Harman, Grant. Quality assessment with national institutional rankings and performance funding : The Australian experiments, 1993-95. **Hr Edn Q** 50(4), 1996, 295-311.

Jackon, Norman. Internal academic quality audit in UK higher education : Part I - Current practice and conceptual frameworks. **Q Assurance in Edn** 4(4), 1996, 37-46.

ECONOMICS OF EDUCATION

Birdsall, Nancy. *Public spending on higher education in developing countries : Toe much or too little?* **Eco of Edn Rev** *15(4), 1996, 407-19.*

Hoenack, Stephen A. The economics of education in developing countries : An assessment of the state of the art. **Eco of Edn Rev** 15(4), 1996, 327-38.

Tilak, Jandhyala B G. Financing higher technical education in India. **Indian J of Tech Edn** 19(3), 1996, 11-23.

SCIENCE EDUCATION

Modak, Sohan P. Science education in Indian universities : Proposal for a 5-year integrated MSc course in life science. **Current Science** *71(12), 1996, 960-7.*

Verma, S S and others. Laboratory experiments : A source of learning. **Indian J of Tech Edn** 19(3), 1996, 43-5.

VOCATIONAL EDUCATION

Agarwal, D P and Raina, K B. Technical education in India : Retrospect & prespect. **Indian J of Tech Edn** 19(4), 1996, 1-6.

Anand, Y K and Wats, Rakesh K. Macro level industry initiative for excellence in technical and vocational education system. **J of Engg Edn** 10(2), 1996, 45-7.

Bhaskaran, R. Technical education and global competition. **Indian J of Tech Edn** 19(3), 1996, 28-31.

Cleminson, Andrew and Bradford, Simon. Professional education : The relationship between 'academic and experimental learning'. **J of Vocational Edn and Training** 48(3), 1996, 249-59.

Dalvi, Mustansir M. Pedagogical research in architectural education. **Indian J of Tech Edn** 19(3), 1996, 39-42.

Fuller, Alison. Modern apprenticeship, process and learning: Some emerging issues. **J of Vocational Edn and Training** 48(3), 1996, 229-48.

Tulsi, P K. Some considerations for organising continuing engineering education programmes. **J of Engg Edn** 10(2), 1996, 31-6.

ADULT EDUCATION

Maclean, Roger G. Negotiating between competing interests in planning continuing medical education. **New Directions for Adult and Continuing Education** 69, 1996, 47-58.

DISTANCE EDUCATION

Evans, Terry and Nation, Daryl. Theories of teaching and learning in open and distance education. **Open Learning** 11(3), 1996, 50-3.

Kleiber, Pamela B. Levelling the playing field for planning university-based distance education. **New Directions for Adult and Continuing Edn** 69, 1996, 59-68.

Newlands, David and McLean, Alasdair. The potential of live teacher supported distance learning : A case-study of the use of audio conferencing at the University of Aberdeen. **Studies in Hr Edn** 21(3), 1996, 285-97.

COMPARATIVE EDUCATION & AREA STUDIES

Kogan, Maurice. Comparing higher education systems. **Hr Edn** 32(4), 1996, 395-402.

Teichler, Ulrich. Comparative higher education : Potentials and limits. **Hr Edn** 32(4), 1996, 431-65.

SAARC DOCUMENTATION CENTRE

SAARC Documentation Centre (SDC) is set up at INSDOC (CSIR). One of the objectives of SDC is human resource development in information management in the SAARC region. For this purpose, SDC conducts short-term courses, seminars, workshops, etc. every year. Participants are drawn from all SAARC Nations. Few seats are reserved for India in each of the programmes.

Nominations are invited from Universities/Academic/Research Institutions for the following SDC Programmes in 1996-1997. The nominations are to be sponsored by the respective institutions.

The nominations should reach SDC by 25th of February 1997.

1. **Short-Term Training in Computer Application in Library & Information Activities**
   No. of seats for India - 2
   Date - Mar 10 - Apr 4 1997

2. **Attachment Training**
   No. of seat for India - 1
   Duration - 3 months
   Date - Starting from 15/3/97
   This is a personalised programme. The course schedule would be drawn after selection of the participant.

General Information

Target Group : Working professionals engaged in library & information activities having a basic knowledge of computers.

The nominees should enclose a brief resume with following details: Qualification, age, experience, a small writeup on the usefulness of the programme to the individual and to the institution he/she is working in.

Venue : INSDOC, New Delhi

SDC will bear the training cost as well as the local hospitality for the participants. Local hospitality includes:

- Accomodation and pick & drop transport.
- A daily allowance of Rs. 200/- per day to meet the cost of food and other expenses.

To and fro travelling expenses will have to be borne by the sponsoring institution.

Send nominations to: Mrs. Aruna Karanjai, Coordinator, SDC, 14 Satsang Vihar Marg, New Delhi 110 067

Telephone: 6515837, 6863759 Fax: 6862228
E-mail : sdc@sirnetd.ernet.in

CLASSIFIED ADVERTISEMENTS

ADVERTISEMENT

SCHOOL OF STUDIES IN CHEMISTRY

PT. RAVISHANKAR SHUKLA UNIVERSITY

RAIPUR (M.P.) 492 010

No.KKG/DST/22/97

Applications on plain paper (giving full details of educational qualifications and attested copies of all certificates) are invited *for the post of 1 JRF (M.Sc. Chemistry,* NET/GATE qualified candidates *preferred,* Scholarship Rs.2500/- P.M. and HRA 1 & 2 years, Rs.2,800/- 3rd year) under the DST funded research project "Acid-Base Equilibria and Metal Complexation of Hydroxamic Acids ~ Applications to DNA Cleavage" for a period of 3 years.

Complete applications should reach to Dr. Kallol K. Ghosh, Principal Investigator, DST Project, SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur **within one month** after the date of advertisement.

SCHOOL OF PLANNING AND ARCHITECTURE

(DEEMED TO BE A UNIVERSITY UNDER SECTION 3 OF U.G.C ACT)

4, BLOCK B, INDRAPRASTHA
ESTATE, NEW DELHI 110002

FACULTY POSITIONS

Applications are invited from Indian Nationals for the following posts:

1. Professor (Rs. 4500-7300) ... 11 Posts (one post temporary)
2. Assistant Professor (Rs. 3700-5700) 8 Posts (one post temporary)

Details of qualification and experience against each vacancy according to specialisation and Application Form may be obtained from the School of Planning and Architecture, New Delhi on payment *of Rs. 50/- (non refundable) through a* Demand Draft drawn in favour of **SCHOOL OF PLANNING AND ARCHITECTURE, NEW DELHI-2** either personally or on written request accompanied by a self addressed envelop size 25 cm x 12 cm. SC/ST candidates are exempted from paying for the Application Form. The Application Form, complete in all respect, must reach the Registrar, **on or before 28th February, 1997.**

D. R. Bains
REGISTRAR

CORPORATE MANAGEMENT OF SNDP YOGAM COLLEGES

KOLLAM-691 001, P.B.512

WANTED LECTURERS

College	Subject	No. of Vacancies	
		FT	PT
RSM SNDP Yogam College, Koyilandi Calicut University	English	2	
	Journalism	1	
	History	1	
	Commerce	2	
	Physics		1
SAS SNDP Yogam College, Konni, M.G.University	English	1	
	Commerce	3	
	Statistics	1	
	Computer Application	3	

(Those who have responded to an earlier notification need not apply again.)

Qualification : P.G. Degree in the concerned subject with not less than 55% marks and pass in the NET held by the UGC or equivalent, subject to relaxation as per rules. For the post of Computer Application, M.Tech/MCA/M.Sc. in computer science with minimum of 55%.

Age : As in Govt. Service. Apply **within 30 days** of this notification in the prescribed publication from which can be had from this office on payment of Rs.100/- plus Rs.10/-(postal charges). Separate application should be submitted for posts notified under each university. 50% of every alternate vacancy will be filled from the members of the Ezhava/Thiyya community.

Kollam, **Vellappally Natesan**
27.1.97 **GENERAL MANAGER**

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

Powai, Mumbai 400 076.

Advt. No. K-33/96-97

Applications are invited from the candidates belonging to SC community for the post of Assistant Librarian in the Scale of pay of Rs.2200-4000. (Emoluments at the minimum Rs.6788/- p.m.).

QUALIFICATION AND EXPERIENCE: Master's degree in Library Science/Information Science/ Documentation or an equivalent professional degree with atleast fifty five percent marks or its equivalent grade OR Master's degree in Arts/Science/Commerce or equivalent degree with atleast fifty five percent marks with Bachelor's degree in Library Science/ Information Science/Documentation or an equivalent professional degree with atleast fifty five percent marks or its equivalent grade. Atleast 7 years experience in a responsible capacity in a University level Library.

The appointee will be required to work on shift duties and on holidays, whenever necessary.

Application form and full details can be obtained from Registrar on request accompanied by a self-addressed stamped (Rs.2/-) envelope of size 25 cm x 10 cm.

Last date for issue of application by post : 24-2-1997.

Last date for receipt of completed applications: 5-3-1997.

Date: **22.1.1997** **Registrar**

NORTH GUJARAT UNIVERSITY PATAN-384263

Applications are invited in the prescribed form alongwith details, available from cash counter on payment of Rs. 50/- in cash or by crossed I.P.O. in favour of Registrar, North Gujarat University, Patan (N.G.) for the following posts so as to reach the undersigned on or before **3/03/97**.

A. Professor Mathematics 1
(Reserved for S.T. Candidate)
B. Reader Mathematics 2
(One post reserved for S.T. Candidate)

Conditions :

1. Knowledge of Gujarati is essential for these posts.
2. Number of posts in reserved category may vary. If candidate of reserved category is not available for the above posts, other applications may be considered for recruitment.
3. Those who have applied earlier may apply again.

Date : 31.1.1997 **Bharat Shah**
Place : Patan **REGISTRAR**

REGIONAL ENGINEERING COLLEGE

ROURKELA - 769008 (ORISSA)

ADVERTISEMENT 1/97
DATED : 22.01.97

Applications in prescribed form (in duplicate) are invited to fill up the following vacancies in faculty positions :

1. **Professor** : Scale : Rs. 4500-150-5700-200-7300/- (a) Ceramic Engineering - 1, (b) Chemical Engineering - 1, (c) Computer Science Engineering & Application (CSE&A) - 2, (d) Electrical Engineering - 1, *(e) Mechanical Engineering - 1, (f) Metallurgical Engineering* - 1 (Lien vacancy), (g) Mining Engineering - 1, (h) Physics - 1 II. **Assistant Professor** : Scale Rs. 3700-125-4950-5700/- (a) Ceramic Engineering - 2, (b) Civil Engineering - 2, (c) Mechanical Engineering - 1 III. **Lecturer** : Scale: Rs. 2200-75-2800-100-4000/- (a) Applied Electronics & Instrumentation Engineering - Open - 1, (b) Ceramic Engineering - SC - 1, (c) Chemical Engineering Open -1 (d) Civil Engineering - SC(VV) - 1, (e) Computer Science Engg. & Application - Open - 1/S.C. - 1, (f) Humanities (English) - Open - 1, (g) Metallurgical Engineering - Open - 1, (h) Mining Engineering - ST-1. No. of posts and reservations are mentioned against departments. *Posts carry* Dearness and other allowances at State Government rates.

Qualification & Experience : Professor: (1) Ph.D. with 1st class degree at Bachelors or master's level in Engg./Technology or Ph.D. with 1st class Master's degree in Physics. (2) 10 years experience in Teaching/Industry/Research out of which 5 years must be at the level of Assistant Professor or equivalent. **Assistant Professor** : (1) 1st class Master's Degree in appropriate branch of Engineering/Technology, (2) 5 years experience in Teaching/Industry/Research at the appropriate level **Lecturer** : 1st class Bachelor's Degree in appropriate branch of Engineering/Technology. For Computer Science Engineering & Application Department, candidates with 1st class M.C.A. degree can also apply. For Humanities Department, 1st class Master's degree in English. *In case suitable woman candidate is not* available, offer will be given to suitable male candidate. Candidates abroad may apply on plain paper with bio-data and fees. Total monthly emoluments at the minimum of scales as at present are, Professor: Rs. 10,615/-, Assistant Professor : Rs. 9,735/-, Lecturer: Rs. 6,018/-. Prescribed application forms and details regarding desirable requirements and specialisation etc. will be available from the undersigned on payment of Rs. 100/- (Rs. 25/- in case of SC/ST candidates) in shape of only Crossed Bank Draft in favour of Principal, Regional Engineering College, Rourkela - 8 payable at State Bank of India, R.E.C. Campus Branch, Rourkela-8 and enclosed a *self addressed envelope* (size 23cm x 10cm) with postage stamp of Rs.2/- affixed to it. The last date of receipt of completed application form is **28.2.97** No. interim enquiries will be entertained SC/ST candidates called for interview will be paid 2nd class to and fro train/bus fare by the shortest route. The Principal reserves the right to change the number of vacancies and reservation posts as necessitated by the situation prevailing at the time of offer of appointment or by any order of the State or Central/Government

REGISTRAR

NATIONAL LAW SCHOOL OF INDIA UNIVERSITY

NAGARBHAVI, BANGALORE - 560 072
Telephone: 3303160: Fax 080-3387858

ADMISSION FOR 1997-98 SESSION

NLSIU, the premier Law University in India offers Legal Education in *multi-disciplinary* context at Under-graduate and Post-graduate levels. It is a Residential University and provides Hostel facilities for boys and girls. It is managed by a Governing Council of which the Chief Justice of India is the Visitor.

1. The University offers a Five Year integrated B.A., LL.B (Hons) Degree *Programme* preparing students for the Bar and varied careers in Law.

(a) **Eligibility** : 10+2 School Examination or equivalent with not less than 50% marks, (students taking qualifying examination in March/April 1997 are also eligible to apply)

(b) **Age Limit** . *Below 20 years as on 1st July, 1997 (22 years in case of SC/ST candidates)*

(c) *Admissions are based purely on merit, on the performance at the All India Admission Test to be held on* **Sunday, 4th May, 1997 at Bangalore, Madras, Delhi, Bombay, Cochin and Calcutta**. All admissions will be completed on or before 30th June. Classes begin on 1st July, 1997.

(d) The Annual Tuition Fee is **Rs. 25,000/-** In order to attract the maximum number of meritorious students from the lower income groups, NLSIU has instituted a number of freeships and scholarships, so that the annual tuition fees of Rs. 25,000/- may not deter students of poor families from prosecuting **studies at National Law School**. During 1996-97 academic year as many as 50 students have been awarded Scholarships/Fee Concessions ranging from **Rs. 3,500/-** to **Rs. 30,000/-** *per annum*.

For Application and Bulletin, write to the Registrar with a Bank Draft for Rs. 200/- payable to the **NLSIU at Bangalore** Applications will be issued from **10th March 1997**. Last date for receipt of requisitions by post is 10th April, 1997. Last date for receipt of completed Applications is **15th April, 1997**. Test paper of 1996 is available from the office at Rs. 20/- per copy. *Send Bank Draft for an amount of Rs. 26/- for sending by post.* Add Rs. 45/- *if they are to be sent by* Speed Post/Courier.

2. The University also offers a Post-graduate programme leading to the degree of LL.M. Also available are M.Phil., Ph.D. (Social Sciences) and LL.D. Degree courses by regular study. Besides, a two year Master's Degree in Business Laws (M.B.L.) Degree and one year Diploma in Human Rights Law *(Dip.H.R.L.) by Distance Education method are offered which can be* pursued by non-law graduates as well. For details in respect of these courses, write to the Registrar with a self addressed stamped (Rs. 2/-) envelope. Fees, including tuition fees, once paid to the University will under no circumstances be refunded.

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

MANIPAL - 576 119 (KARNATAKA)

ADMISSIONS FOR 1997-98 ACADEMIC YEAR TO MBBS/BDS AT KASTURBA MEDICAL COLLEGE, MANIPAL/MANGALORE & COLLEGE OF DENTAL SURGERY, MANIPAL/MANGALORE

Applications are invited from eligible candidates for admissions to the MBBS/BDS courses for the academic year 1997-98

ELIGIBILITY : A candidate should satisfy all the following requirements

a) The candidate must be an Indian national born on or before December 31, 1980.

b) The candidate must have passed any of the qualifying examinations equivalent to 10+2 higher/senior secondary examination, after a period of 12 years of study the last two years of such study comprising Physics, Chemistry, Biology and English or any other 10+2 equivalent examinations such as PUC, ICSE, HSC etc of an Indian University/Board

c) The candidate must have secured not less than 50 per cent of the total marks in English, Physics, Chemistry and Biology taken together at the qualifying examination

d) The candidate who is taking examination prior to the entrance test but whose result is not declared till then, may also apply and appear for the entrance test Such candidates shall not be eligible for admission to the MBBS/BDS course if he/she does not pass the qualifying examination with the requisite percentage of marks and produce proof thereof such as original marks sheets at the time of counselling Failure to produce the mark sheet in original would result in forfeiture of the candidature

e) The candidate must have done at least 5 years of schooling in India including Class 11 and 12, out of the total period of 12 years of schooling (from Class 1 to 12)

Warning : ***Candidates are warned that if they do not fulfil the above eligibility criteria, they should not submit their application for MAHE undergraduate courses. If a candidate is found to have not fulfilled the eligibility criteria in all respects, he or she will not be considered for admission irrespective of their appearing and securing any rank whatsoever in the entrance test.***

PROCEDURE FOR ADMISSION : Candidates will be selected for admission on the basis of the rank obtained in the written entrance test which will be conducted on **May 21, 1997** at Bangalore Calcutta, Chandigarh, Chennai, Delhi, Ernakulam, Hyderabad, Mangalore Manipal Nagpur Thiruchirapalli

PROCEDURE FOR APPLICATION : *The prospectus and application form can be obtained by post by enclosing (i) a crossed demand draft for Rs 600/- (not refundable) in favour of* "Manipal Academy of Higher Education" payable at Manipal or Udupi *(Karnataka) and ii) a self-addressed stamped (Rs 14/-) envelope of* 10x12 inch size, at the address given below

The Admissions Officer

Manipal Academy of Higher Education

University Building, Madhava Nagar Manipal-576 119 Phone 08252 - 71201 Ext. 2499 Fax: 08252 - 70062

Last date for request of application forms by post is February 24, 1997.

The completed application form and accompanying documents must reach the above address **on or before March 5, 1997** The University will not be responsible for any delay/loss in transit

The prospectus and application form can also be obtained across the counter (subject to availability) in person from the branches of Syndicate Bank/The Lord Krishna Bank/Corporation Bank/ICDS Ltd., on payment of Rs 620/- (including Bank charges Rs 20/-) during business hours in the following towns/cities from January 20, 1997 till March 3, 1997.

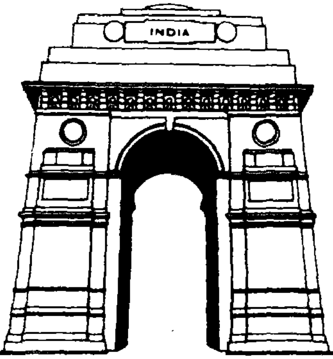
Syndicate Bank Branches : Calcutta (1) 26 Shakespeare Sarane, Camac Street - 700 017 (2) BB - 24, Sector - 1, Salt Lake City - 700 064 (3) No 3, Central Road, Jadhavpur - 700 032 **Chandigarh** S C O 66-67, Sector 17 B, Bank Square - 160 017 **Delhi** (1) Super Bazar Bldg Connaught Circus - 110 001 (2) Defence Services Officers Institute, Dhaula Kuan - 110 010 (3) C - 34, 1st Floor Defence Colony, DDA Office cum Shopping Complex, Opp Moolchand Hospital - 110 024. (4) Bldg 2 & 3 Central Market West Punjabi Bagh - 110 026 **Hyderabad** (1) No 5-9-246/1, Abid Road Opp Grammar School - 500 001. (2) D. No 8-2-461/464 Road No 1, Banjara Hills - 500 034 **Mumbai** (1) Plot No 227, Nariman Bhavan Premises, Nariman Point - 400 021. (2) *Sangam Cinema Compound, 127 Andheri Kurla Road, JB Nagar, Andheri (E) - 400 059* **Nagpur** : *Ulhas Bhawan, Law College Sqaure - 440 010* **Secunderabad** *(1) Opposite Ishaq Bus Stop Wellington Road,* Picket-500 003. (2) 3-1-28,29,30/1 Rashtrapathi *Road-500 003*

Lord Krishna Bank Branches : **Bangalore** Shivshankar Plaza, Richmond Circle - 560 027 **Chengannure** Ambattu Buildings, Court Road, Chengannure - 689 121 **Chennai** Precision Plaza, 281, Mount Road - 600 018. **Coimbatore**. Cheran Towers, 78-B, Govt Arts College Road - 641 018 **Ernakulam** MG Road (North End) Prabhu Towers, Near Cochin Stock Exchange, Cochin - 682035 **Kozhikode** Paramount Tower, Town Hall Road - 673 001. **Manipal** Basic Sciences, Manipal - 576 119 **Kottayam** 1st Floor, CSI Baker Complex, Baker Junction - 686 001, **Trivandrum**: Karimpanal Arcade, 1st Floor, East Fort - 695 023 **Corporation Bank** Carstreet, Mangalore - 575 001 **ICDS Ltd**. Arunachal, 306-307, 3rd Floor, Barakhamba Road, New Delhi - 110 001

The PG entrance examinations are likely to be held in May/June 97. The details will be published in the newspapers later.

UNIVERSITY NEWS, 35(6), FEBRUARY 10, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL–11106/97

WE, THE PEOPLE OF INDIA,
having solemnly resolved to
constitute India into a Sovereign Socialist Secular
Democratic Republic and to secure to all its citizens
JUSTICE, social, economic and political,
LIBERTY of thought, expression, belief,
faith and worship,
EQUALITY of status and of opportunity,
and to promote among them all,
FRATERNITY assuring the dignity of the
individual and the unity and integrity of the Nation,
In our Constituent Assembly this twenty-sixth day of
November, 1949, do hereby adopt, enact and give to
ourselves this Constitution



Republic Day
26th January, 1997

davp 96/495

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PAWAN SIKKA

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Multimedia
— Its Applications in Libraries

D. NATARAJAN

Education — A Service Under Consumer Protection Act 1986

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ARCHANA MOHAPATRA, DEBENDRA KUMAR BISWAL & BHABAGRAHI BISWAL

Research on Vocational Education
— The Indian Scene

A.M. AHMADI

The Strength of Character
— Convocation Address

Association of Indian Universities

भारतीय पुनर्वास परिषद

REHABILITATION COUNCIL OF INDIA

(A Statutory Body under the Ministry of Welfare)
4, Vishnu Digamber Marg, New Delhi-110 002.

ADMISSION NOTICE

Applications are invited from eligible candidates on prescribed form to undertake a Joint Entrance Examination for admission to *First Year Professional Courses being conducted by Institutions in India as follows*

	Name of Institution	**Name of course**
1	National Institute of Rehabilitation Training and Research Olatpur P O Bairoi, Distt Cuttack-754 010 (Orissa)	1) Bachelor in Physiotherapy (3 year + 6 months internship) 2) *Bachelor in Occupational Therapy* (3 years + 6 months internship) 3) *Diploma in Prosthetic & Orthotic Engg* (2 year + 6 months internship)
2	National Institute for the Orthopaedically Handicapped Bon Hooghly, B T *Road, Calcutta-700 090* (W B)	1) Bachelor in Physiotherapy (3 *year + 6 months internship*) 2) Bachelor in Occupational Therapy (3 years + 6 months internship) 3) Bachelor in Prosthetic & Orthotics (3 years + 6 months internship)
3.	*National Institute for the* Mentally Handicapped, Manovikas Nagar, Secunderabad-500 009 (A P)	*Bachelor s Degree Course in Mental* Retardation (3 years) (affiliated to Osmania University Hyderabad.

The Joint Entrance Examination will be conducted at **Ahmedabad, Allahabad, Bhopal, Bhubaneswar, Calcutta, Dehradun, Delhi, Guwahati, Hyderabad, Jaipur, Mumbai, Chennai, Mysore, Ranchi & Thiruvananthapuram on 25th May 1997 (Sunday).** The Examination date can however be changed at the discretion of Rehabilitation Council of India

A candidate must have passed 12th Class Examination under 10 + 2 system with **five subjects** or an equivalent examination with *Physics Chemistry, Biology/Mathematics and English Securing 50% marks in PCB to join Bachelor in Physiotherapy* and Occupational Therapy Courses 50% in PCB or PCM for Bachelor in Prosthetic & Orthotics/Diploma in Prosthetic & Orthotic Engineering Course (40% in case of Scheduled Caste, Scheduled Tribe and Physically Handicapped Candidates in PCB/PCM as applicable).

15% seats for SC 7½% for ST candidates and one seat for Physically Handicapped (PH) in each course are reserved in above two institutions with the condition that their disability should not hinder in training and subsequently in performance of their professional duties.

For Bachelor's Degree Course in Mental Retardation Candidates should have passed 10+2 or an equivalent examination with any combination of elective subjects securing 50% aggregate marks (40% in case of SC/ST candidates) 15% seats for SC and 7½% for ST candidates are reserved

Those candidates who will be appearing in 12th class examination under 10+2 system or equivalent Examination in March April 1997 and whose results are likely to be declared before 30th June 1997 and hope to obtain required percentage of marks are also eligible to apply A candidate should have attained or will attain the age of 17 (Seventeen) years on 31st December 1997 No relaxation in minimum age is admissible Maximum age for General Candidates is 25 years and 30 years for SC/ST/PH candidates *The Prospectus-cum-Application Form separately for* (1) Physiotherapy, Occupational Therapy Prosthetic and Orthotic (Degree, Diploma) and (ii) Bachelor s Degree Course in Mental Retardation may be obtained personally from the Office of Rehabilitation *Council of India at New Delhi or National Institute for the Orthopaedically Handicapped, Calcutta, or National Institute of Rehabilitation* Training and Research, Olatpur, Cuttack or National Institute for the Mentally Handicapped, Secunderabad or Artificial Limbs Manufacturing Corporation of India, G.T. Road, Kanpur or Deep Shika, Arya Samaj Building, *Shradhanand Road* Ranchi (Bihar) or Bhagawan Mahavir Viklang Sahayata Samiti S M S Hospital, Jaipur (Counter sale) on payment of Rs 150/- for General Category candidates & Rs.100/- for SC/ST/PH candidates through Demand Draft on any Nationalised Bank at New Delhi or Indian Postal Order on New Delhi Post Office drawn in favour of "**Rehabilitation Council of India" New Delhi.** Candidates who want the Prospectus-cum-Application Form by POST should send payment of Rs 170/- for General Category and Rs.120/- for SC/ST/PH Candidates *through Demand Draft or Indian Postal Order as mentioned above alongwith a self addressed unstamped envelope* of size 12x28cms to **Secretary, Rehabilitation Council of India** which will be sent by Registered Post The amount includes cost of Prospectus as well as ***Examination Fee.***

Candidates should apply for either (i) *Bachelor in PT/OT or* (ii) *Bachelor in* Prosthetics and Orthotics/Diploma in Prosthetic & Orthotic Engineering or (iii) Bachelor's Degree Course in Mental Retardation as the JEE for all courses will be common and will be *held on same date and time A stipend of Rs 100/- P M for full period of the course will be payable to selected candidates given* admission in BPT/BOT/B(P&O)&DPOE Courses as well as prescribed monthly allowance to students of BMR Course based on their family income. Details are given in the Prospectus

Limited Hostel Accommodation to outstation candidates given admission provided as per vacancies available with the Institutes The application forms duly completed alongwith necessary certificates as mentioned in Prospectus should reach **The Secretary, Rehabilitation Council of India, 4 Vishnu Digamber Marg, New Delhi-110 002 by 1st April 1997.**

Applications received late will not be considered.

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Foresight Studies and Technology Vision 2020

Pawan Sikka*

The emergence of technologies in new and frontier areas such as new materials, biotechnology, electronics etc is rapidly changing the technological environment. Decision makers and policy planners have to assess the performance of the existing level of the available technology and take into account the impact of new technologies while making efficient planning for science in the future towards societal development in the country.

Foresight studies provide new possible opportunities for the development of new and emerging areas of science and technology (S & T) in the country, as well as indicate avenues for commercialization of indigenous technology. These studies, while assessing the prevalent resources and future requirements evolve a network among the academic, R&D centre and industrial sectors for taking short term and long term measures towards economic development.

Technological forecasting is the most useful tool in planning and decision making activity in any organizational activity be it government or research & development laboratory, or large multinational or a small scale industry. The forecast —

- identifies the limits of upscaling,
- establishes feasible rate of progress with time,
- indicates possibilities of achievement in a particular model,
- provides warning signals, and
- evaluates the process of competing technologies.

Such quantitative forecasts suggest the identification of priorities and allocation of resources accordingly in the R&D system, keeping in view the social needs or national interests, since the future technologies in a broad sense act as a resource for future development.

Forecasting Organization

With a view to provide policy support for the growth of indigenous technology in India, a Technology Policy Statement (TPS) was enunciated in 1983. As a follow up of TPS and based on the recommendations of the Technology Policy Implementation Committee (TPIC), the Government of India established, in 1988, Technology Information Forecasting and Assessment Council (TIFAC) — as an autonomous organisation under the Ministry/Dept. of Science & Technology, New Delhi.

Recognising the crucial role of technology in the economic development, TIFAC has generated about 100 Technology Forecasting (TF), Technology Assessment (TA) Studies and Techno-Market Surveys (TMS) in the following sectors:

---

* *Joint Adviser, Department of Science & Technology, Government of India, New Delhi-110 016.*

- Steel
- Energy
- Biotechnology
- Advanced Materials
- Chemicals
- Human Habitat
- Agro-based industries
- Pollution Control (Water)
- Environmental related issues
- Manufacturing Industries
- Bio-medicine etc.

The studies have taken into account the current status of technology in Indian industry/R&D; technology status and trends abroad; needs of Indian industry/society; availability of infrastructure and other inputs required; environmental aspects; potential of the technology to make large scale beneficial impacts etc.

TIFAC has constituted the following nine task forces for undertaking technology assessment and forecasting in the next 20-25 years time frame in various areas. These are —

- Road Transportation
- Electric Power
- Agro Food Processing
- Waterways
- Future Technology Forecast 2020
- Sensors
- IPR related activities
- Aviation
- Housing

The objectives of the task forces were to :

(i) Provide directions for national initiatives in science and technology to realise vision for India upto 2020;

(ii) Provide a strong basis for policy framework and investment for R&D in government and private sector; and

(iii) Contribute to development of an integrated S&T policy both at the state and national levels.

Among them, one of the major task force is the Task Force on *Future Technology Forecast for India 2020*, which cuts across many areas and is now functioning in full swing. Under this Task Force, eleven panels, in specific technology areas have been constituted, for making detailed study on the various aspects, covering —

- Engineering Industries
- Electronics & Communication
- Materials & Processing
- Chemical Process Industries
- Agriculture
- Life Sciences & Biotechnology
- Health Care
- Infrastructure
- Strategic Industries
- Services
- Driving Force and Impediments

System Development

In the process, TIFAC has established an excellent example of networking with industries, laboratories, academic institutions and government agencies.

The whole exercise of generating foresight studies in new and frontier areas would aid the emergence of a new technology vision in India leading to technology development, attaining excellence in the global market and social change since the country has scientific and technical infrastructure, qualified technical manpower, investment and climate. Latest management strategies be worked out to bridge the gap between the policy planning and implementation of technological efforts in India.

The studies had employed various techniques of forecasting like Brainstorming Sessions, Preparation of Perspective & Scenario Reports, Delphi Technique, Nominal Group Technique in some cases, subsequent workshops etc. The Task Forces/Panels addressed to the following questions :

- Are there areas where India has a strong technology base?
- What are the technologies which can change dramatically the Indian economic/social condition or which have specific advantages?
- What are the spin-offs the technologies developed?
- What is the focus on in-house and indigenous technological development?
- Possible actions/strategies/policies which

will be implemented in the future in the biotech industry to get competitive advantage in the world market?

- What are the technologies that would come in a big way in the future by 2010, 2015, 2020 and 2025 respectively?
- Which are the technologies that would become obsolete or disappear by 2000, 2005, 2010 and 2015 respectively?

A separate panel of experts for each area was constituted, to bring out technology assessment in the form of perspective report. The perspective report for each area was read by a team of expert readers who prepared an objective scenario report. In order to derive the benefit of inputs by many other experts, the Delphi technique was adopted, soliciting responses from experts to specific questions on various issues which may prevail in the future based on scenario reports. Nominal Group Technique (NGT) was applied in some areas. In some cases, responses from the individuals were obtained at a workshop.

In order to ensure cross linkages/input flow between various panels, the sector specific Task Forces and to facilitate interlinkages and keep a watch on schedules and progress, in addition to the Coordinator of the Panel who was associated with the Chairperson of the Panel, a scientist/engineer from TIFA/TIFAC was also associated with the Task Force.

The perspective/scenario reports of the panels, Delphi responses/NGT rankings formed the basis to finalise the vision and action reports and to arrive at suggestions for policy guidelines, strategies and action plans for government, industry, R&D institutes & academy to realise the Vision for India upto 2020.

Each vision report runs into numerous pages having valuable information on current status, the forecasts, the assessment in the Indian context. They bring out strategies for policy & action plans for government, industry, R&D institutes & academy.

One could see through these reports, various

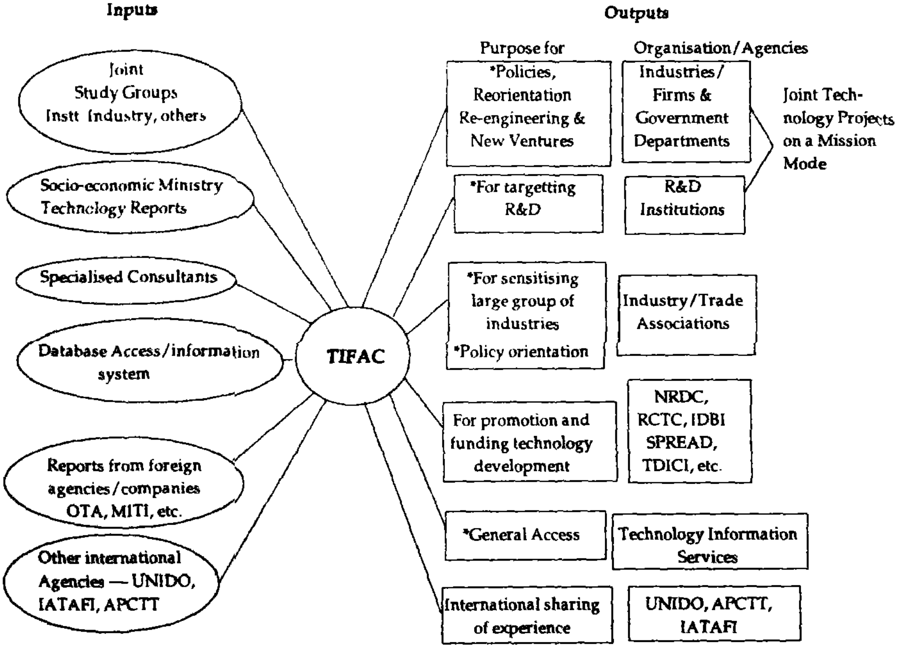
Inputs
Outputs
Purpose for
Organisation/Agencies
Joint Study Groups Instt Industry, others
Socio-economic Ministry Technology Reports
Specialised Consultants
Database Access/information system
Reports from foreign agencies/companies OTA, MITI, etc.
Other international Agencies — UNIDO, IATAFI, APCTT
TIFAC
*Policies, Reorientation Re-engineering & New Ventures
Industries/ Firms & Government Departments
Joint Technology Projects on a Mission Mode
*For targetting R&D
R&D Institutions
*For sensitising large group of industries
*Policy orientation
Industry/Trade Associations
For promotion and funding technology development
NRDC, RCTC, IDBI SPREAD, TDICI, etc.
*General Access
Technology Information Services
International sharing of experience
UNIDO, APCTT, IATAFI

Fig 1. "System Diagram" of Technology Monitoring and TIFAC outcomes. Actions suggested ranged from simple modification of policies and/or administrative measures or the introduction of relatively simple technology practices to those involving mastery of new and emerging complex technologies. One would find these having a thread of interconnection. It is very difficult to choose one or the other to be sufficient for India. It would be essential to orchestrate all of them in a systematic form and also with a reasonable time synchronism. These collectively formed Technology Vision for India upto 2020.

The "Technology Vision 2020" Reports

Sl. No. Title

1. Agro-Food Processing : Technology Vision 2020
   Executive Summary : Milk: Cereals, Fruits & Vegetables
2. Agro-Food Processing : Technology Vision 2020
   Milk — Current Status & Vision
3. Agro-Food Processing : Technology Vision 2020
   Cereals — Current Status & Vision
4. Agro-Food Processing: Technology Vision 2020
   Fruits & Vegetables — Current Status & Vision
5. Advanced Sensors : Technology Vision 2020
6. Civil Aviation : Technology Vision 2020
7. Electric Power : Technology Vision 2020
8. Waterways : Technology Vision 2020
9. Road Transportation : Technology Vision 2020
10. Telecommunications : Technology Vision 2020

Future Technology Forecast for India upto 2020

11. Food & Agriculture : Technology Vision 2020
12. Engineering Industries : Technology Vision 2020
13. Health Care: Technology Vision 2020
14. Health Care : Technology Vision 2020
15. Life Sciences & Biotechnology : Technology Vision 2020
16. Life Sciences & Biotechnology : Technology Vision 2020
17. Materials & Processing : Technology Vision 2020
18. Services : Technology Vision 2020
19. Strategic Industries : Technology Vision 2020
20. Electronics & Communication : Technology Vision 2020
21. Chemical Process Industries : Technology Vision 2020
22. Chemical Process Industries : Technology Vision 2020
23. Chemical Process Industries : Technology Vision 2020
24. Chemical Process Industries : Technology Vision 2020
25. Driving Forces - Impedances : Technology Vision 2020

National Agenda

TIFAC has already prepared a blue print for further follow up action on these reports and would send copies to the Planning Commission and related ministries and industries.

The report prepared in combination with number of departments is aimed at ensuring a better quality of life for the people, globally competitive products through the development of a scientific approach and building up of a vibrant economy. The blue print has taken into consideration the impact of the multinational corporations on technology development and is drawing up a framework for IPR-related issues in the post-GATT scenario. It has suggested massive technology upgradation in all key areas. In the case of internal security, for example, the plan demands a shift from the traditional intensive manpower approach to technically trained personnel. The full depth of the document and related action plans can be understood only when the detailed reports are studied by several groups of interested people. Implementation of the findings of the studies on Vision 2020 will entail modification of policies and administrative measures. It would require networking among the interdisciplines and multi-institutions.

The reports, prepared after a two year long nation wide exercise, have revealed that India had a vast strength in its scientific and technical human power, software engineering and agricultural and industrial base and that it could be further enhanced to get better technological yield through the networking of R&D institutions, industry and other sectors.

[The views expressed are the personal views of the author only.]

References

1. Pawan Sikka, Technological Forecasting for R&D Management, *Financial Express*, 16 May 1994.
2. ——————, Science Policy Through Foresight Studies: Its Emergence in India, *Science and Culture*, March-April 1996, Pp. 70-75.
3. ——————, Indigenous Development and Acquisition of Technology : An Indian Perspective. *Technovation* 16 (2)85-90, 1996.

MULTIMEDIA
Its Applications in Libraries

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Historical Background

Multimedia — a subfield of computer science has progressed to the point that some of its innovative methods are of practical use for information retrieval system design. Before understanding the overview of such a concept, a brief study of the historical background of the term multimedia is necessary. The term first appeared in education during 1960's and the 70's when it described new media supporting the learning process in classroom instruction. The underlying force in the emergence of computerized research is the digital technology of information storage, retrieval and transmission. This technology first flowered in the USA but is now being rapidly advanced by Japanese companies. Digital media can store sound, picture and data in various combinations. The new medium is the compact disk (CD-ROM) or optical disk or laser disk. For a number of years compact disks have been an alternate format to magnetic tapes for at home presentation of movies. Compact disks containing digitally encoded music came into the market in 1983. The Library of Congress has also made a major commitment to CD-ROM as a medium for pressing and disseminating print materials.

CD-ROM is not the latest word in information storage technology. That honour probably goes to digital audio tape (DAT). Actually DAT and its players or recorders are being introduced in Japan. A DAT cassette measuring 2-3 inches can hold information equivalent to 6,00,000 printed pages. This is twice the capacity of a CD-ROM. Unlike the CD-ROM a DAT can also be used to record information. Multimedia is an advanced technology in computer science and it gets the advantage of both CD-ROM and DAT into its application.

Introduction

Multimedia informs, educates, persuades and entertains us with dazzling effects of colour, animation and sound. Through its many possible applications, the librarian offers some ideas to help the users in focusing the latest technological developments in the library functioning.

It is one of the ironies of information technology scene world wide that multimedia suffers not from the fact that few people understand it but rather that every one understands it differently. Generally the term multimedia means the integration of text, graphics, sound, animation and video to convey information. The key word here is interaction. The word interaction from its Latin origins describes a mutual dealing between two or more people. A dictionary of sociology distinguishes different types of interaction by which communication between people or groups occur through speech, symbols and gestures. This communication results in change of attitudes, expectations and behaviours. If we apply the same word to computers, interaction means that program execution depends on the user's input, e.g., the user can actively control program flow.

Multimedia delivers information in a variety of ways but achieves their greatest effectiveness through their interaction. In the first case, packing, music and informative knowledge combine to convey the message. In the second case, technology provides a more effective presentation for less expense, information, images and sounds are technically and aesthetically integrated, then focused on a single specific purpose. This new technology helps the user in briefing the encyclopedias through CD-ROM drives; narrating the designs in the architecture; visualize workings of the human system in anatomy, etc. The possibilities are staggering and promise to usher in a new era for libraries.

In brief the term multimedia describes the use of

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different media and technologies to present the information. For instance, entering into an academic library we find an assortment of attractive packages on the shelves, which offer their contents with striking visual appeal. Soft background music subtly increases the readiness of scholars to buy an encyclopedia on Engineering or Medicine or Social Sciences, etc while the reference librarian answers our questions easily. In few public libraries, which have limited personnel, videos present product demonstration. Strategically placed VCR's and monitors hawk the advantages of different government schemes like 20-point formula, Women welfare, Rajiv Rojgar and Janma Bhoomi to passing people. A soothing voice, backed up by melodious sound track reads from the script designed to anticipate people's questions. Before understanding ongoing developments and their current uses with reference to libraries, we will in general study the impact of TV based computers and in particular the need of multimedia in libraries.

Need of Multimedia in Libraries

With the information explosion, the literature has been growing at an exponential rate causing problems of space for storages as well as utilizing of vast amount of information. An engineer or scientist or a researcher has to spend most of his valuable time in searching and reading literature for information on a desired subject. The failure to locate the required information leads to duplication of work already done. If librarians have to play the role of a midwife a or an obstetrician in helping users to give birth to new ideas and understanding insights they shall have to equip themselves with the latest information and communication technology to provide efficient services in future. According to Prof. Lancaster, in the year 2000, every scientist may have one on-line terminal in his office and one at home. The scientist would use the terminal to create, transit and receive information.

Over the past decade, ever increasing number of libraries and information centres in many countries have developed computer based Bibliographic Information System in place of traditional card catalogues for identification and location of documents available in the libraries. Multimedia is often used not only to serve the purpose of an enhanced on-line catalogue, but also to serve as an integrated system involving near total library activities.

General Applications

In the previous section we stated the problem of space for storages of information and that of its utilization. Let us see how multimedia technology tackles these twin issues.

Interface to a Vast Body of Information

Multimedia is a subset of Hypermedia which has to a great extent simplified the utilization of such a vast body information. Hypermedia in computer science is the integration of graphics, sound, video or any combination of the above into primarily associative system of information storage and retrieval. Hypermedia is especially an interactive formation where choices are controlled by the user structured around the idea of offering a working and learning environment that parallels the human thinking process. It is an environment that allows users to make associations between topics rather than move sequentially from one to the next as in an alphabetical list. Hypermedia topics are thus linked in a manner that allows the user to jump from subject to related subject in searching information. For instance a Hypermedia presentation on navigation might include links to topics as astronomy, bird, migration, geography, satellites and radar. If the information is primarily in text form the product is hyper text. If video, animation or other elements are included the product is Hypermedia.

Hypermedia based interfaces to information in a library are the key to the problem of utilization of the vast body of information in a library. They will revolutionize the process of research of library information. The interface itself could be provided at various levels. At the global level it could provide a structured interface to all the books and journals available in the library. A similar subject-wise interface could be provided for all the electronically available books and journals. This would greatly simplify the task of the researcher.

The Paradigm of Information Storage

Information has always been stored on permanent non-volatile media in a static manner i.e. to a large extent as text with a few pictures. The information retrieved therefore has been only static. Unfortunately a good deal of information is lost in this form of information storage. When an author writes a book, the myriad of images in his mind that inspire him to write find no place in the writing itself. It is left to genius of the author to write lines that evoke similar visions in the mind of the reader. However multimedia puts greater power in the hands of the writer. For instance a poet could include as background the scene which inspired him. If this sounds a bit far-fetched consider the 'Mastering series' of CD-ROMs released by Microsoft Corp. These are books on various software that include tutorials in which along with the standard text and illustrations we even have videos of people explaining various concepts. However there is a catch, the saying 'a picture is worth a thousand words is also true digitally'. The amount of space required to store a picture with a decent colour depth is often thousands of times more than that required by simple text. It is here the CD-ROM comes to the rescue. A CD-ROM can store vast amount of information (as microscopic blisters on optical material burnt in by lasers) in a very compact and convenient form.

The point is that such technology should soon find its way into libraries. It would revolutionize the entire structure of the library. Some obvious advantages offered by this change in the paradigm of information storage are the following :

i) The first advantage is of content, as discussed above a digital document can include pictures, audio, programming instructions for interactivity and animation.

ii) The second is of convenience. A CD book is smaller than its paper equivalent. (It may even contain more than one book). The 'pages' don't yellow and neither is it attacked by insects or time. It is much more easier to store by virtue of its size. The huge space now required by libraries to store books would be reduced dramatically making a library much more manageable.

iii) Electronic updates of digitally stored books are easily available and as discussed searching for information in such books can be made almost childishly simple.

However as pointed out by Bill Gates (CEO Microsoft Corp.) the paper based book, magazine or newspaper is more handy than the electronic version in many ways. To read a digital document you need a personal computer. Compared to personal computer a book is small, lightweight and inexpensive. Yet this will change. According to the same Bill Gates

"Ultimately, incremental ~~improvements in~~ computer and screen technology will give a universal electronic book or e-book' which will approximate today's paper book. Inside a case of roughly the same size and weight of today's paperback book you'll have a display that can show high resolution text video and pictures. You will be able to flip pages with your finger or use voice commands to search for information...".

The future obviously belongs to such digital multimedia books and libraries have to gear up and adapt at least incrementally for such technology.

Multimedia and Library Management

Finally we foresee that multimedia can also enhance library facilities and library management. Today even the best of the catalogues can be cryptic and unhelpful. However a multimedia based catalogue could greatly help the user and the librarian. If a user wanted a certain book the Librarian could simply invoke a multimedia application with the appropriate details and it could display the information regarding its availability, the rack on which the book is, the position of the rack in the library and the route to it. Ofcourse with secure terminals the user could do this himself without the necessity to *bother the librarian. The librarian could also benefit* from multimedia administration utilities. He could issue commands with voice or 'drag & drop' with the mouse to perform various tedious administrative functions.

The Future

We have till now looked the near future. Now let us take a look at the distant (maybe not so distant) future. Another technology that in a way uses multimedia and in a way extends and encompasses it is fast catching up. Termed with the exciting name 'Virtual Reality' it could well revolutionize human life let alone libraries. Virtual Reality attempts to simulate real life experiences by projecting digitally created scenes onto the human brain by various means. If realized to its fullest extent its capabilities would be mind-blowing and its implications staggering. Though its scope encompasses almost every activity of human life, we shall here concentrate on libraries.

In virtual reality the hardware ranges from LCD glasses to head mounted devices (HMD's) (which allow 3-D images to float around you) data gloves and pneumatic legs (to allow the artificial world to jump and twirl around you). With all these an attempt is made to provide an interactive environment that simulates real environment. In effect it could make a real library morph into a virtual one. A user could visit a library while sitting in his home, go through the racks, pick up books, sit in virtual chairs and possibly interact with a virtual librarian. He could borrow books just as he would in a real library and the 'book' could be electronically transferred to his system. Of course this would require the redefining of concepts of libraries, books, cards, borrowing, issuing, etc so that they fit into the digital virtual reality framework.

Software for Multimedia in Libraries

India has not exploited the potential of TV based countries as an educational tool. Whenever computer has been used for instructional purposes it is always presumed that it will replace a teacher. During 1990's multimedia succeeded the TV-based computer technology. Perhaps the use of multimedia to replace an encyclopedia might be a more appropriate concept. In communicating knowledge in many areas a picture may be better than a thousand words. If well prepared programs on agriculture, industry, education and science and technology are beamed in accordance with an advanced schedule; librarians could use these programs to hold discussions around them. This would require that the programs be repeated in different time slots and a channel be exclusively available for such services. If these programs could be supported by instructional manuals for librarians, effectiveness of lessons could be increased further.

The whole idea of investing a multimedia network is to use the reach of all information seekers at the earliest and easiest way. However in practice we do not receive the expected outcomes against the investment. Recent efforts in wider use of computers in all types of libraries have also suffered from lack of detailed planning. Computers equipped with CD-ROM drives have been provided in many academic and public libraries in selected areas. Unfortunately there are no system operators or programmers and other infrastructure for effective utilization. The computer can be effective only when appropriate software is developed and skilled staff appointed and the whole system is managed well in terms of maintenance support and advanced planning of programs. If multimedia programs could be designed to mix education and entertainment (sometimes called '*Edutainment*') such sources could become a continuous source for knowledge for all types of library users. Production of good quality educational software is also essential for the success of multimedia programs to be exhibited particularly in public libraries. In the same way multimedia packages covering the programs on Dairy Farming, Weaving, Education, Industrial and Economic sectors can be supplied to the public libraries located in metropolitan as well as suburban areas.

Multimedia in Academic Libraries

The multimedia database is most useful for narrating encyclopedias available in CD-ROM packs. In a process called hypertext searching the researcher can ascertain information by following threads that link the topic of interest with other subject areas. The hypertext techniques use the multilevel structure of a database. Like, cross-references to related articles in an encyclopedia entry, clicking hyperguides (specially marked keywords in hypertext) provides cross-referencing. Additional options permit scanning the entire text sequentially and retracing required information by a marked format.

Several databases are also available in CD-ROM format. Microsoft bookshelf offers a full assortment of such resources, including an entire encyclopedia (Microsoft Encarta), an atlas, a dictionary, a thesaurus and an almanac on one CD-ROM. The entire information in all these consists of text information, pictures and audio and video clips integrated into magnificent multimedia presentation. Again the interface is made easier and enhanced by hypermedia which allows users to surf through the sea of information easily by just clicking on hypertext cross-references.

Multimedia components such as graphics, animation and sound increase the learning process through visualization. Since the beginning textbooks could never replace human teacher. One of the reasons has been that humans tend to concentrate more and grasp while hearing than while reading. Even now there is no replacement for the human teacher as the computer lacks intelligence. However audio enhanced text (via multimedia) can greatly enhance the capability of artificial teaching mechanisms. The animation can explain many complex subjects better than text. One has to only look at some of the medical science teaching packages which display mind-blowing animation clips of the human anatomy as they explain its intricacies to acknowledge the power that multimedia gives to the teaching process; and graphics and music can contribute additional information and enjoyment

('Edutainment') to the study of academic material.

Multimedia in Public Libraries

Some technology enthusiasts would believe that placing a computer in every public library is the solution to overcome the problem of adult illiteracy. It can enlighten the skills of people, who live in the remote corners of rural areas and backward regions. Others opine for expensive satellite TV networks with voice feedback technology thus providing monitoring of various programs, personnel functioning of education departments, publication of textbooks and preparation of video films. There are certain areas like use of TV based multimedia technology in Zilla Grandhalaya Centres which motivate students, farmers, industrial workers, etc.

CD-ROM Beethoven Quartel No. 4 narrates a look at the advertisements in multimedia periodicals and it reveals the variety of offering already available on CD-ROMs : Bird guides, aircraft lexicons, medical questions and answers, terrorist group profiles and country data from the CIA, etc. In another example we have the 'The Complete Audubon' on CD-ROM including over 500 full color bird lithographs, 150 lithographs of mammals birds, songs, etc. The third example is that of the 'War Liefert : CD-ROM' which reveals information on 1,18,000 companies from Germany, Austria and Switzerland. The disk contains connections between different products, services and suppliers, etc.

Multimedia in Special Libraries

The application of multimedia is most useful in medicine while visualizing the working of the human system. The real impact of multimedia in this respect is achieved only when the application goes beyond text display. Animation can clearly demonstrate the working of the heart and circulatory system of complex process in the natural sciences.

The 'Family Doctor' is a guide on CD-ROM. It contains answers to 2,000 most frequently answered questions about different diseases, injuries, infections, etc. It also contains illustrations of the human anatomy and a consumers guide to 1,600 prescription drugs, diseases, side effects etc is also included. In the second example 'Pediatrics Medicine' edited by David G. Nathan gives complete knowledge on CD-ROM. It includes all articles by the National Library of Medicine. The articles include clinical treatment, research diseases and injuries etc, in infants and in children. Such CD-ROMs could be invaluable in special hospital libraries. Doctors, researchers and even training nurses could benefit enormously from such systems. This is just one instance of how multimedia could usher in a new era in special libraries.

Conclusion

Major developments are causing a revolution in computer technology. The new technology provides for rapid interpretation and scope to incorporate latest developments that are taking place elsewhere in the world. This dream has already been realised in many sectors of science and technology and can now be realistically applied to enhance libraries. The time for floppies and compact disks to make their appearance on the library scene has arrived. Hopefully every librarian would welcome the technological advancements like multimedia and enjoy the benefits while disseminating information to the information seeker in the easiest and most economic way.

References

1) Bill Gates, *The Road Ahead,* Viking, The Penguin Group, 1995.

2) Dirk, *Multimedia Mania,* Abacus publication, USA, 1994.

3) V.H. Deborah, Maximizing computer power in public library service, *IASLIC Bulletin* 38 (4) 1993, Pp147-153.

5) Gio Weiderhold, 'Digital Libraries, Value and Productivity', *Communications of ACM*, Vol 38 No. 4 April 1995, P 85.

4) Hood Horward, A. 'Disk and Dat: recent developments in legal databases and emerging information technologies in USA, *Journal of Lib & Inf Sci*, Vol 13, No.1, June 1988.

5) Marchionini Gray, 'The role of Digital Libraries in teaching and learning', *Communications of ACM*, Vol 38 No. 4 April 1995, P 67.

6) S.K. Tanaja, "Application of micro computers in Libraries", *Journal of Library & Information Science*, Vol. 10 - No. 1 June 1985.

7) N. Venugopal, 'Use of Multimedia in cardiology', *The Economic Times* 11.9.96.

8) Ron Wodaski, *Virtual Reality Madness 1996*, SAMS Publications 1996.

To Our Contributors

Contributors are expected to submit only original articles for publication in the *University News*. If an article is found to be plagiarised, it will be the sole responsibility of the contributor to face legal action, if any.

Education — A Service Under Consumer Protection Act 1986

D. Natarajan*

Introduction

Education is imparted through schools, colleges, institutions and universities and the education institutions may be private, government or autonomous bodies. Imparting of education is a composite activity consisting of several components, namely, admission to these institutions, teaching and instructing, conducting examinations, evaluation of performance of students in the courses they have undergone, issuance of certificates and diplomas of achievement and marksheets, degree certificates etc, on payment of prescribed fees (consideration) by the students to the educational authorities unless specified as 'free'.

Judgement

In a landmark judgement delivered on 16.1.1996, the National Consumer Disputes Redressal Commission (NCDRN) presided over by Mr. Justice V. Balakrishna Eradi in a majority judgement ruled that

> 'Imparting education was a service within the meaning of that expression in the Act'. (*Chairman, Board of Examinations V. Mohideen Abdul Kader Revision Petition No. 546 of 1994.*')

The above said verdict clears all the doubts in respect of the status of imparting education by educational institutions in India. This judgement reversed the earlier decisions by state forums and also those of NCDRC itself.

Earlier Decision

In the case of *Mumbai Grahak Panchayat Vs Bombay University*, it was held that 'a university while examining, rechecking or revaluating answer papers at the instance of a candidate is not performing a service which had been hired or availed of for consideration'.

Incidentally, the NCDRC was then also presided over by the same judge Mr. Justice V. Balakrishna Eradi in the year 1994 (*Times of India*, Bombay 20th January, 1994).

Facts of the Case

Ms. Sangeeta Mirashi, a final year B.Com. student from Bhavan's College at Andheri, in the Maharashtra State Consumer Disputes Redressal Commission, preferred a complaint through Mumbai Grahak Panchayat, a city based consumer body, claiming a total compensation of Rs. 1,23,200 from Bombay University for its negligence in wrongly declaring her failed in the April 1990 examination.

Ms. Mirashi had applied for revaluation in 'financial accounting and auditing' in which she secured 16 out of 100 marks, thereby failing in the T.Y. B.Com. examination. She passed in all other subjects. She applied for a revaluation in this subject and paid Rs. 100 as fee but did not get her results and filled the form to appear in all subjects in November, 1990. After seven and a half months, Bombay University apprised her of her success after revaluation, securing 35 out of 100 marks in the paper in which she was declared failed earlier. Incidentally, she also passed the entire examination which she had written in November, 1990, after refusing to take exemptions.

Ms. Mirashi filed a complaint against Bombay University alleging "deficiency of service" and "humiliation and mental agony" caused to her on account of wrongly declaring her failed in the earlier examination.

Mr. Rui Rodrigues, who argued on behalf of Bombay University, together with Mr. S. Radhakrishnan, senior advocate for the University opined that National Forum's verdict was justified because "university education stands on a totally different footing without a profit motive, unlike private tutorial set-ups which are proliferating every day".

However, Mr. Shirish Deshpande, who had argued the case for the student earlier, said the judgement was "erroneous, unconvincing and unjustifiable." It had no detailed reasoning except that it relied heavily upon the earlier verdict passed against the Gujarat Secondary Board in September, 1993.

Mr. Shirish Deshpande's stance was vindicated

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when the NCDRC pronounced exactly opposite judgement after two years.

Consumer Protection Act, 1986

Imparting of Education attracts the provisions
of section 2(1) d (ii) - Consumer
2(1) g - Deficiency
2(1) o - Service
which are as follows :-

Section 2 (1) (d)(ii) states that "Consumer" means any person who

> hires any services for a consideration which has been paid or promised or partly paid and partly promised, or under any system of deferred payment and includes any beneficiary of such services other than the person who hires the services for consideration paid or promised, or partly paid and partly promised, or under any system of deferred payment, when such services are availed of with the approval of the first mentioned person;

Section 2 (1) (g) states that

> "deficiency" means any fault, imperfection, shortcoming or inadequacy in the quality, nature and manner of performance which is required to be maintained by or under any law for the time being in force or has been undertaken to be performed by a person in pursuance of a contract or otherwise in relation to any service;

Section 2(1)(o) states that

> "service" means service of any description which is made available to potential users and includes the provision of facilities in connection with banking, financing, insurance, transport, processing supply of electrical or other energy, board or lodging or both, entertainment, amusement or the purveying of news or other information, but does not include the rendering of any service free of charge or under a contract of personal service.

The definitions of "Consumer", "Deficiency" and "Service" have wide terms. The words "any service for a consideration" in the definition of "consumer" points to the generally non-restrictive nature of the definition in relation to service.

Supreme Court Judgement

The Supreme Court had held in the case of *Lucknow Development Authority Vs M.K. Gupta (LW 28.3.94)* that "any service except when it is free of charge or under a contract of personal service is included in it and that any attempt to exclude services offered by statutory or official bodies to the common man would be against the provisions of the Act and the spirit behind it". The words "avail of" as alternative to lies in section 2(1)(d)(ii) as also the words "has been undertaken to be performed" in pursuance of a contract or otherwise in relation to any service in section 2(1)(g) had the effect of bringing under the purview of the consumer forum services rendered by bodies like universities, which were established for rendering specified services and which services were availed for a consideration even in the absence of any arrangement or contract to hire such services.

The Consumer Protection Act, 1986 was a social welfare legislation aiming to provide for the better protection of the interests of consumers. Consumers legislation in India is in an evolutionary stage and it was only in November, 1995 that the Supreme Court had said the final word on the applicability of the Act to consumers of medical services in the case of *Indian Medical Association Vs V. P. Santha* (C.A. No. 688 of 1993 decided on 13.11.1995).

In Lucknow Development Authority Vs. M.K. Gupta (LW: 28.3.1994) NCDRC had held that the activity of providing medical assistance against payment of fees carried on by the hospitals and members of the medical profession fell within the scope of the expression 'service' and where there was deficiency in the performance of such service the aggrieved party could invoke damages provided under the Act by filing a complaint before consumer forums.

In consonance with the above legal trend and thinking the NCDRC ruled that "Imparting education was a service within the meaning of that expression in the Act" in the case of *Chairman, Board of Examinations Vs. Mohideen Abdul Kader* (Revision Petition No. 545 of 1994 decided on 16.1.1996).

Facts of the Case

Shri Mohideen Abdul Kader, a student who wished to appear in a subject known as Production Technology examination was denied permission to write that paper by the hall supervisor on the ground that his name appeared against Code No. 2 while the examination which he wished to take was under Code No. 1. He alleged that he was wrongly restrained and prevented from writing the examination on that day because of the attitude and negligence of the opposite parties and that this was a case of deficiency in service. He claimed compensation for the inconvenience caused to him.

The District Forum held that the complainant

(Contd. on page 14)

A Study of Research Questions in Indian Teacher Education

Bharat Joshi *
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Introduction

The research based knowledge can play a significant role in the building of theory, policy, and practice. Each research is undertaken to generate new knowledge in the field answering unsolved definite questions under study. As research questions are answered to generate new knowledge, the kind of knowledge to be generated can be determined by systematically analyzing the research questions.

Research questions can be classified applying different schemes. After surveying, analyzing, and applying a dozen schemes to classify research questions, *Dillon* (1984) developed his own scheme. Aristotle's few, short and encompassing propositions inspired him to develop a research question classification scheme. Research question classification schemes have important uses for the understanding, practice and pedagogics of inquiry. With the use of a scheme, research questions can be classified at three levels of inquiry: (1) the individual study, (2) a corpus of studies, and (3) the entire enterprise of research in a given field (*Dillon* 1984). In turn this understanding serves as a useful complement to a priori prescriptions and assertions about what inquiry consists in (*Bhogayata*, 1993).

Although Smith (cited in *Bhogayata*, 1993) proposed that causal research was the dominant mode of inquiry in education, and Kerlinger (cited in *Bhogayata*, 1993) stressed that a good research question should express a relationship between two or more variables; Dillon (1984) found that causal questions of all types accounted for only one tenth of the questions and only half of the questions entailed a relation of any kind among variables.

Three researches (*Dillon*, 1985; *Bhogayata*, 1983; *Bhogayata* 1994), applying Dillon's research question classification scheme, were available to the present investigators. Dillon (1985) classified questions posed in 171 researches on curriculum published in six international journals during 1981, and found that the research questions on curriculum were not characterized under one specific category as they varied largely. Bhogayata (1993) applied the scheme to classify 315 educational technology research questions and found that the inquiry in educational technology was characterized by the questions describing the individual and contingent attributes. After classifying mathematics education research questions under the same scheme, Bhogayata (1994) reported that the majority of research questions (51%) were categorized under comparison order.

Katz and Raths (1990) developed a taxonomy, having 11 parameters, to classify research in teacher education. Displayed in a matrix, the parameters provided a well thought device to order, summarize and synthesize available researches in the field. The taxonomy was also useful in generating new questions for research in teacher education. Though the taxonomy was useful for classification of researches in teacher education, the question "What were the kinds of questions that were posed for research in teacher education?" remains unanswered in available literature. So, the present investigation was undertaken.

Objective

The present investigation was intended to find out the kinds of questions posed for research in Indian teacher education?

Method

Sample. From 265 abstracted researches in *Indian* teacher education edited by Buch (1987, 1991) in the third and the fourth surveys of research in education, 132 researches were selected randomly as sample for the present study. These studies were undertaken during the year 1978 to 1988. From these 132 studies 853 questions were collected by the investigators (*Table* 1) Number of research questions in different studies ranged from 1 to 40 (M = 6.46, SD =5.52).

In the present study the questions were in the

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Table 1: Source, number of studies and number of research questions

Source of researches	*No. of studies*	*Studies in the sample*	*No. of research questions*
The Third Survey (Buch, 1987)	121	61	376
The Fourth Survey (Buch, 1991)	144	71	477
Total	265	132	853

form of objectives or hypotheses. Such non-interrogative research questions were transformed into interrogative forms using the information from the statement of objectives, hypotheses, and results in the studies.

Tool. Dillon's (1984) research question classification scheme was used in the present investigation. Since Bhogayata (1993) provided a very comprehensive description of the scheme, it is presented here with some necessary modifications.

Dillon's scheme proposes to classify questions for research and the questions it classifies are general to research rather than specific to some subjects or topics such as teacher education or experimental physics. It classifies questions according to the kinds of knowledge they entail about existential aspects of some phenomenon P or Q, and it arranges the classes by priority and increment of knowledge. The use of knowledge and containment as classificatory principles are based on the view that entailment of knowledge is a priority of a research question. In Dillon's scheme, each successively ordered type of question is conceived to entail the preceding one and to yield an increment of knowledge about the phenomenon in question.

The scheme comprises 17 numbered categories, with 12 lettered subcategories, grouped into 5 orders of information; for each case the scheme supplies the generic question that constitutes the category. First-order categories of questions describe the properties of some phenomenon P and entail knowledge of individual attributes. Second and third order questions describe comparative and contingent relations between P and Q. Knowledge of relational attributes is seen to prepropose first-order questions of individual attributes. Two additional orders (zero-order and extra-order) group other kind of questions that may arise and be encountered in the researches. Dillon's scheme was successful in classifying 99.2 per cent of empirical educational research questions (Dillon, 1984).

Data analysis. Each of 853 research questions, selected for this study was classified using Dillon's (1984) classification scheme. Then frequency and percentage were calculated for each subcategory, category and order.

Results

Dillon's (1984) classification scheme was successful in classifying 100 per cent of research questions in Indian teacher education in the current investigation. The frequency and percentage of Indian teacher education research questions in each subcategory, category, and order of the scheme are presented in Table 2.

Table 2 shows that 309 (36.23%), 281 (32.94%), 234 (27.43%), 29(3.40%) and 0(0.00%) Indian teacher education research questions were in the first third, second, extra, and zero orders of the scheme, respectively.

There were 197 (23.09%) , 135 (15.83%), 122 (14.30%), and 114 (13.36%) research questions in the categories of questions for difference, character, conditionality, and correlation, respectively. These four categories had higher frequencies of research questions than any other category of the scheme.

Though the first and third order of the scheme had more frequencies than the second order, the category of questions for difference under the second order of the scheme had the highest number of frequencies of research questions.

Discussion

The results of the present study showed that the inquiry in Indian teacher education was characterized by the questions describing the individual, contingent and comparative attributes of the phenomena in question. The questions entailing characters, differences, and conditionality were 135 (15.83%), 197 (23.09%), and 122 (14.30%) in the first, second and the third order, respectively. These results were consistent with the results in the previous studies (*Bhogayata, 1993, 1994*).

Researchers in the field of Indian teacher education were interested to explore the properties, compare the variables, and confirm the contingencies of the variables under investigation.

As the findings of the present investigation were based on the abstracted reports of the original researches, large scale studies with primary sources need to be conducted.

Table 2: The frequency and percentage of Indian teacher education research questions in the categories and orders of the scheme.

Category of Questions	*Frequency*	*Percentage*
Zero Order:	(0)	(0.00)
o. Rhetorical	0	0.00
First order:		
Properties	(309)	(36.23)
1. Existence	57	6.68
2. Instance	69	8.09
3. Substance	(11)	(1.29)
a. Nature	8	0.94
b. Label	2	0.23
c. Meaning	1	0.12
4. Character	135	15.83
5. Function	(30)	(3.52)
a Modes	7	0.82
b. Uses	16	1.88
c. Means	7	0.82
6. Rational	7	0.82
Second order :		
Comparisons	(234)	(27.43)
7. Concomitance	(17)	(1.99)
a. Conjunction	13	1.52
b. Disjunction	4	0.47
8. Equivalence	20	2.34
9. Difference	(197)	(23.09)
a. Disproportion	179	20.98
b. Subordination	18	2.11
Third order :		
Contingencies	(281)	(32.94)
10. Relation	45	5.28
11. Correlation	114	13.36
12. Conditionality	(122)	(14.30)
a. Consequence	116	13.60
b. Antecedence	6	0.70
13. Biconditionality	0	0.00
Extra order :		
Other	(29)	(3.40)
14. Deliberation	28	3.28
15. Unspecified	0	0.00
16. Unclear	1	0.12
Total	853	100

References

Bhogayata, C.K. (1993). A study of research questions in educational technology. *Journal of All India Association for Educational Research*, 5(4), 1-6.

———————— (1994). Characteristics of modern Indian research questions in mathematics education. *Gatishil Shikshan*, 21(12), 4-10.

Buch, M.B. (ed.). (1987). *Third survey of research in education : 1978-83*. New Delhi. NCERT.

———————— (ed.) (1991). *Fourth survey of research in education : 1983-88*: New Delhi. NCERT.

Dillon, J.T. (1984). The classification of research questions. *Review of Educational Research*. 54(3), 327-361.

———————— (1985). The problems-methods-solutions of curriculum inquiry, *Journal of Curriculum and Supervision, 1(1)*, 18-26.

Katz, L.G. & Raths, J.D. (1990). A framework for research on teacher education programs. In R. P. Tisher, & M. F. Wideen (eds..), *Research in teacher education: International perspectives*. (pp. 241-254). New York: Falmer.

Education — A Service Under Consumer Protection Act 1986

(Contd. from page 11)

was prevented from writing the examination due to confusion and gross negligence of the invigilator and granted compensation of Rs. 2000. The State Commission held that education imparted by the government, universities and private institutions and examinations conducted by them were services rendered for consideration and the student who availed of this services was a consumer within the meaning of that expression in the Consumer Protection Act.

The NCDRC has affirmed the verdict of District Forum and held that "Imparting education was a service within the meaning of that expression in the Act. The order of the State Commission was correct."

Conclusion

The decision of the National Consumer Disputes Redressal Forum pronounced in the case of *The Chairman, Board of Examinations Vs. Mohideen Abdul Kader* has very far reaching implications and very wide ramifications. It would particularly affect the functioning of the office of the Controller of Examinations and the same should be restructured, reoriented and revitalised to cope up with the changing legal environment.

Research on Vocational Education
The Indian Scene

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Education is an instrument of change and progress. It provides opportunities to develop skills, in addition to the knowledge it creates, through engaging the learners in a variety of processes and situations. These skills are foundational skills like communications, competition, interactional manual etc, which would enable the learners to develop specific job-oriented skills later. At the same time, it also enables the learner to enrich his personality by developing his creativity to the utmost Therefore, educationists, planners and administrators put much emphasis on education as an important factor for economic development.

It is the age of science and technology. Modernisation and rapid development are continuously taking place. As a result, a large number of employment opportunities both wage as well as self-employment are created. But there is dearth of suitably qualified persons with appropriate skills, knowledge and competencies to exploit these opportunities. Therefore, to meet the national needs of trained manpower and also to divert a large section of students from university education to a variety of gainful vocations, vocational education was introduced at the higher secondary stages along with the traditional academic streams.

The National Policy on Education (1986) gave a new impetus to vocational education. This policy states "The introduction of systematic, well-planned and rigorously implemented programs of vocational education is crucial in the proposed educational reorganisation. These elements are meant to enhance individual employability, to reduce the mismatch between the demand and supply of skilled-manpower and to provide an alternative for those pursuing higher education without particular interest and purpose".

Vocationalisation is looked upon as an effective instrument to prepare middle level manpower, produce entrepreneurs and accelerate economic development.

The present Distant Vision : The scheme of vocationalisation of higher secondary education was started in 1987-88 in 24 states and 4 union territories. Facilities have thus been created for diversion of about 6.27 lakh students at +2 level. Policy makers hope that this programme will solve the unemployment problem and will raise standard of living.

To make vocational education programme effective, there is need of undertaking advance research on this and allied areas. Before undertaking new researches, an attempt should be made to enquire into the studies already conducted. This piece of research aims at studying the finding of the investigations and thereby identifying the missing links between theory and practice. This will enable the investigators to visualise the present scenario of vocational education in India.

Objectives

The objectives of this study are :

1. To trace the genesis of vocational education programme; and
2. To assess the present research scenario of vocational education in terms of
    - i) Organisational structure,
    - ii) Management,
    - iii) Quality of students,
    - iv) Utilization of opportunities,
    - v) Teachers' training,
    - vi) Performance profile, etc.

Methodology

Since information concerning various aspects of the study is available in official records research publications, documents, monograph etc, it is proposed to adopt the method of library study.

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The research team visited important libraries of the country and the government offices and collected the required infomation. The data collected were analysed qualitatively and interpreted.

The Genesis of Vocational Education

The present concept of vocationalisation dates back to the ancient vedic culture in which technological knowledge was transferred from the father to son. This kind of education also descended from the teacher to the people. The pattern of technical education, during the Mughal period, remained similar to that in the ancient period. It was during the British period that the trade and commerce got a set back. On the educational front too little attention was directed towards those areas of education and training which equipped one with the tools of earning one's livelihood.

For the first time in our country the attention of the government was drawn towards practical education by the Wood's despatch in 1854. Since then the problem of higher secondary education has been under constant review. A number of committees and commissions have been formed from time to time to consider the prevailing educational system and to make recommendations for reform.

It was first recommended in 1882 by the Indian Education Commission under the Chairmanship of Hunter that the curriculum of the secondary education should be split up into 'A' and 'B' curriculums. Curriculum 'A' to have subjects that were to be useful for higher studies and curriculum 'B' to have vocational and practical subjects.

The Hartog Committee (1929) recommended that more boys should be diverted to industrial and commercial career at the end of the middle stage. Provision should be made for alternate courses in that stage, preparatory to special instruction in that stage, preparatory to special instruction in technical and industrial schools.

The Sapru Committee (1934) recommended diversified courses at the secondary stage, preparing students for university education and providing vocational education.

Gandhiji's *Nai Talim* (1936) conceived education as an independent stream with training to prepare students for identified occupations.

Writing about the reorganisation of vocational and industrial education, the Abot and Wood Report (1937) recommended that the nature of vocational education should be determined by the prevailing circumstances in view of the multifarious needs of the locality. They observed that technical education should keep pace with industrial development of the country in order to check all possibilities of unemployment.

The Sargent Report (1944) recommended that the high schools will be divided into two classes, (i) Academic high schools, and (ii) Technical high schools. In the second type of schools vocational and commercial subjects will be taught. Provision should be made for technical, commercial and arts education for full-time and part-time students.

The Secondary Education (Mudaliar) Commission (1952-53) suggested ways and means of reform and reconstruction of secondary education in the country. It recommended that multipurpose schools should be started to provide varied course of interest to students with diverse aims, aptitudes and abilities. In the opinion of the Commission the diversified courses should begin in the second year of the high school or the higher secondary school stage. The two stages of education are (a) the high school stage of general education without much specialisation, and (b) the higher secondary stage with provision for specialisation. The higher secondary stage should include vocational and semi vocational courses in which the students can specialise on the experience gained at the high school.

The Education (Kothari) Commission (1964-66) suggested restructuring of education (10+2+3) and recommended distinct streams of general and vocational education at higher secondary stage to intercept the goalless climb up of the youth on the educational ladder and divert them to productive path. The Commission felt that it should be possible to divert 50 per cent of students of the vocational stream.

The Parliamentary Resolution on National Policy of Education (NPE, 1968) accepted the recommendation of the Education Commission (1964-66) and emphasized the "effectively terminal nature of the vocational stream of studies."

The International Commission on Education and Development (ICED, 1972) critically assessed the educational situation of the world and recommended that education at primary and secondary levels must become theoretical, technological, practical and mental at the same time. Professional and technical training colleges must be developed in conjunction with the secondary education system. The instruction they give must be followed by practical training at place of work, all of which must above all, be completed by recurrent education and vocational courses.

The Central Advisory Board of Education (CABE) at its meeting in 1975 endorsed the policy resolution and resolved to adopt 10+2+3 pattern of education and reiterated that the +2 stage of education should be regarded not merely as a college preparatory, but a period for preparing an increasingly large number of school leavers for different vocations in life. The CABE entrusted NCERT to prepare curricula and help the state governments in implementing vocational education.

The NCERT document *Higher Secondary Education and its vocationalization* presented a model conceptional framework for implementation in 1976. The document asserted that "Vocationalization is a major transformation in education and cannot be achieved without important structural and functional changes in the whole setup". The vocational education programme at higher secondary stage was initiated in 1976.

In June, 1977 the committee headed by Sri Iswarbhai J Patel recommended that socially useful productive work must find a central place in the school curriculum. This should be given the status of a full-fledged subject for the award of certificates at the end of Class X.

The Union Minister of Education in his capacity as the president, NCERT appointed a National Review Committee popularly known as Adiseshiah Committee to review the above NCERT document. This committee touched upon nearly all the recommendations of the preceding document and gave detailed recommendations for introduction of vocational courses at the higher secondary stage. Its report was published as *Learning to do* in 1978.

The Ministry of Education, Government of India simultaneously constituted the working group on vocationalisation of education, the report of which was finalized in November, 1977. It presented details in regard to the scheme of implementation and financial implications while giving its own set of recommendations. These recommendations had close resemblance to those of the *Learning to do* and its predecessor NCERT document.

A special session of Conference of Boards of Secondary Education (COBSE) in September, 1978 recommended that state Boards should review their courses in the light of the course patterns and other suggestions made in these reports (*Learning to do* and the Working Group Report on Vocationalization of Education) to suit the needs of the community.

In 1984, the document "Challenges of Education, a policy perspective" published by the Ministry of Education, Government of India initiated a nationwide debate on all major issues in the domain of education.

In 1985, the National Working Group on Vocationalization of Education, led by Dr. V.C. Kulandaiswamy undertook extensive review of vocational education in the country and provided guidelines for the development of the programme. It formulated the concept of vocationalization at different levels and recommended the linkages required among different agencies running vocational programmes, setting up of a well knit management system, an action plan for promotion of vocationalization in the country and liberal central financial assistance for achievement of the targets fixed.

In 1986, the National Policy on Education accorded a very high priority to the programme of vocationalization and set a target to cover 10 per cent of higher secondary students by 1990 and 25 per cent by 1995.

In 1987, the programme of action (POA) prepared by the Ministry of Education for implementation of NPE (1986) in the field of vocationalization accepted the model suggested by the Kulandaiswamy working group. A detailed framework of the programme of vocationalization of education to be launched in the country was formulated in consultation with experts and discussed in the conference of State Education Ministers held in 1987 and a broad consensus was arrived at on various components of the programme. In the conference state representatives were of the view that liberal financial assistance was necessary for implementation of the programme.

The centrally sponsored scheme (CSS) was launched by the Ministry of Human Resource Development under which assistance would be given *to the state governments and union territories and* non-government organisations for approved purposes.

The vocationalization of higher secondary education has been introduced in different states of the country since 1976. During the years, 1976 to 1984, nine states and 3 union territories implemented the scheme for higher productive and economic development. Later on, near about all states and union territories followed the same path in order to cover 10 per cent of higher secondary students under its purview by 1990 and 25 per cent by 1995.

Recognising the importance of and need for diversification of post-secondary students to vocational stream, the Ministry of Human Resource Development and National Council of Educational Research and Training initiated many actions for its promotion. A number of studies have also been conducted to provide feedback of the states for its better implementation.

Present Scenario

Taking a gestalt of the present state of vocational education in the country, it can be stated that the objectives of vocational education mentioned in the NPE, 1986 have not been achieved to the desired extent. Only research can say the extent to which the vocational education has shown success in terms of the expectation aroused earlier.

The variety of variables that attract the attention of researchers interested in evaluation of vocational education are types of management, quality of students flow, availability, adequacy and utilization of facilities, organisation and administrative styles, methods of evaluation of performance, nature and types of problems affecting programmes, teacher preparation programme, problems of supply and demand for skills, availability of human resources, etc. Research issues in vocational education that have been identified in the foregoing analysis under policy formulations, planning and implementation can be pursued by researchers from the angles of various disciplinary orientations in education. They may be fitted into following framework.

Table 1 reveals that research studies on vocational education are gradually increasing from decade to decade.

The findings of area wise research studies areas wise on vocational education are presented in Figures 1 & 2.

Historical studies : A few studies on this aspect have been done. The important findings of these studies are :

- Supply of vocational-skill always fell short of the demand, and
- Women's enrolment was quite low and there was sex typing of courses — *Mohanty* (1986).

Comparative studies : Studies done on this field of vocational education are very few. The important findings of these studies are given hereunder :

- Vocational Education system was functioning

Table 1. Area and Yearwise studies on Vocational Education

Sl. No.	*Areas of study*	*1947-56*	*1957-66*	*1967-76*	*1977-86*	*1987-92*	*Total*
1.	Historical studies	-	-	1	2	-	3
2.	Comparative studies	-	-	1	1	3	5
3.	Psychological studies	-	-	7	16	6	29
4.	Socio-economic studies	-	-	1	5	3	9
5.	Evaluative studies	-	-	5	11	7	23
6.	Administrative and Curriculum studies	-	1	3	10	2	16
7.	Miscellaneous studies		-	5	4	4	13
	Total	-	1	23	49	25	98

(Studies after 1992 were not available to the researchers).

very well in foreign countries as observed through attitudes to manual labour, private support, relevance of courses, production of literature, teachers training while India was found wanting in all these aspects — *Bhatt* (1972).

- There was a marked difference among Indian states in respect of number of vocational institutions, vocational areas of study and government support for quick implementation;
- In some of the states parents have lost their faith in vocational education;
- Status of vocational teachers varies from state to state;
- Some states are unable to spend the funds sanctioned by the centre for better implementation of the programme due to various reasons;
- Children from poor families and from lower strata of society who joined vocational education with a high hope were very much frustrated in some states; and
- In some states vocational education at +2 level was introduced on a large scale. It resulted in over supply and unemployment of skilled workers on a very large scale — *Gogate* (1987).

Psychological studies: Among the studies conducted on vocational education a few studies have covered the psychological aspect. Some of the important findings are given hereunder:

- High correlation was observed between high job-proficiency and high self concept as well as low job proficiency and low self concept — *Dastoor* (1982).
- Parental, occupational and social background, intelligence, school achievement, peer group experience, vocational guidance are some of the variables which may influence vocational aspiration — *Chadha* (1979);
- Knowledge of occupations and monetary returns from them was highly associated with the level of aspiration of students; and
- Home atmosphere is treated as an important factor for occupational aspirations of students — *Pendhharkar* (1977);
- Vocational stream students recorded high mean scores in goal aspirations and goal perceptions — *Paul* (1981);
- Intelligence and achievements in schools are associated with measures of vocational maturity — *Dabir* (1986);
- Neurosis, self-sufficiency, introversion, extroversion, dominance, submission showed inconsistent relationship with vocational maturity — *Parlikar* (1973);
- Agreement between choice of occupations and self-concept was high among urban students — *R.K. Reddy* (1974);
- Vocational interest influences vocational maturity and vocational choices in later life which in turn affect job satisfaction and optimization of job performance;
- Students of the vocational stream displayed interest in business and computation; they were better in social service, music games and sports — *S.I. Saheb* (1980);
- Middle class adolescents have a stable self concept and extended future orientation — Mary *Zohu* (1981);
- Vocational interest was the chief factor in determining occupational choice among adolescent girls. Girls displayed diversified vocational choices — *H. Bhatnagar* (1983);
- Social and economic status of the students significantly related to their vocational needs. Occupational choices have significant relationship with their study only — *A.V.R. Reddy* (1972).

Socio-economic studies : There are a few studies on the socio economic profile of vocational education. The relevant findings of these studies are :

- Factors affecting implementation of workers education scheme are improper selection of teachers, theory-oriented teaching and lack of motivation for workers for participation — *J.N. Singh* (1965);
- Major areas identified for introducing vocational education at +2 level are agriculture, industries, trade and commerce, health and public services — *Gyan*, (1978);
- Courses observed to have potential for creating self-employment are dairying, sugarcane technology, animal husbandry, inland fisheries,

cooperative farming, agricultural extension, food preservation and processing, veterinary services, small scale industrial services, nursing and mid-wifery, pre-school education — *NCERT Research Wing* (1976);

- Though vocational needs of women were highly diversified and fell into nine categories, the bulk of the ongoing training programmes revolved round tailoring, embroidery and agriculture — *Jain and Kurulkar* (1980);
- The role performance of subject specialists is affected by insufficient incentives and recognition, inadequate empirical research support, lack of facilities for transport and training, lack of motivation among farmers etc. — *O.P. Bhatnagar* (1971);
- Appreciable changes were observed in values, attitudes and career commitment of students — *Sundervajan* (1977).

Administrative and curriculum studies : A few studies have been conducted on various aspects of administrative and curriculum of vocational education. The important findings are :

- The imperfect adoption of western models in organisation multi-purpose schools did not suit the social structure of India — *Khanolkar* (1960);
- Motivation of personnel, inadequacy of resources, high costs, absence of guidance and know-how, large class size are the difficulties in integrating SUPW in school subjects — *Sindhe* (1985);
- The absence of clear guidelines, lack of orientation of teachers, the blind rush to the commerce stream, absence of diversification are due to inadequacy of grants to vocational education in higher secondary schools *Patel* (1980);
- The causes of dropouts are parental indifference, improper attitudes to labour, unsuitable curriculum and unattractive trades, poverty and social maladjustment among pupils and the employment of teaching staff on temporary basis — *Munjal* (1972);
- Entrance examination marks and qualifying examination marks showed better predictive value than interview marks in regard to performance of students — *Patdar* (1981).

Evaluative studies : There are several studies conducted on evaluative aspect of vocational education. These studies have some relevant findings that are outlined below.

- Facilities for vocational education are not the same throughout the state — *Deshamukhya* (1984);
- Facilities for practical work, library and storage are very poor — *Gogate* (1987).
- Common trades in vocational education are agriculture, farm management, automobile servicing and electrical;
- The vocationalization stream did not get adequate facilities like the general education;
- Most of the principals of vocational schools have not technical qualification, but teachers have; and
- Admission is done on merit and no rush for admission is noted — *Planning Commission*.
- Performance of male students in vocational education is better than that of girls; and
- Practical experience could not be provided to the students appropriately because of lack of funds, lack of transportation and lack of cooperation from teachers — *Mohanty* (1981).
- In most of the states, the vocational courses do not match the local needs of employment as perceived by principals and teachers; and
- The syllabi are very lengthy and could not be completed in time — *Gogate* (1987).
- The students of vocational education are from middle class and low class families — *Mangat* (1988).
- The presently run vocational courses are useful as compared to general courses, but failed to prepare a student for any job or self-employment venture;
- The government is not providing any job or financial assistance to the students passing out with vocational courses;
- The practical training imparted by visits to different institutions and by arranging guest lectures was not sufficient;
- Teachers needed to be trained in all practical aspects of their respective subjects;
- The grants provided by government are insufficient for imparting practical training;
- The students are admitted in the vocational ed-

ucation stream without any aptitude test;

- Adequate cooperation from industrialists and factory owners is not available; and
- The vocational group students and the teachers teaching vocational subjects show a favourable attitude towards vocational education — *Gokhale* (1984).

Miscellaneous studies : A few studies were conducted under this aspect of vocational education. The relevant findings of these studies are :

- Vocational education is not up to the mark due to absence of properly trained teachers, low salaries, over crowded classes, inadequate facilities etc. — *Singha* (1967).
- The syllabus is not related to the needs of the employment market — *Bahuguna* (1973).
- Time allotment is not adequate and teachers do not have any practical experience — *Raijada* (1972).

Discussion

The foregoing clearly display the trend of vocational education in India.

Keeping in view the nature and variety of unresolved issues and problems in the field of vocational education and its significance for national development, it is felt that the volume of research carried out in the country in this area is grossly inadequate. Whatever research there has been in this area, has been quite slow and lacking uniformity. It got a boost only after the introduction of vocational education at +2 levels at the national level.

It is observed that research studies do not give same weightage in the coverage of area. Near about two-thirds of researches come under educational psychology and evaluation. Not a single study has been reported which is philosophical, analytical or critical in nature. A little attention has been paid to other issues of vocational education like sociology of vocational education, the historical roots of contemporary problems, the economics of the field, issues in manpower planning, management aspects, curriculum analysis, organizational and administrative issues, etc. Another type of imbalance observed pertains to concentration of research interest in only a few regions of the country though the nature of the subject demands nation-wide and sub-regional examination of issues and problems.

It is significant that the studies in the area lack theoretical perspective. A theoretical framework is needed for the development of human resources.

There is also a need to develop indigenous techniques and tools for measuring a variety of variables in this areas of education. It would be desirable to develop in institutes and departments of education within colleges and universities multi-disciplinary research team which will work on man-power analysis, social rates of return for specific vocational programmes, financing, psychological aspects, role analysis, cost-effectiveness of programmes, non-formal approaches, curriculum analysis, etc in the area of vocational education. These teams should conduct research studies as well as collect data on a continuing basis about the dynamics of labour and the educational and training systems and feed it back to policy makers, planners, employers, consumers of education and educational institutions for its effective implementation.

References

1. Best J.W. and Khan, J.V. *Research in Education*, Prentice Hall of India, New Delhi, 1988.
2. Buch M.B.(Ed). *Second Survey of Research in Education*. (1972-78).
3. ——————. *Third Survey of Research in Education*.
4. ——————. *Fourth Survey of Research in Education*.
5. Chaudhari V.S. *Issues and advances in Education* (1986).
6. Guru G. *Guidance for Development of School Industry linkages for Vocational Education Programme* (NCERT).
7. Kakkar N.K. *Workers Education in India*, Sterling Publishers, New Delhi.
8. Kenlinger Fred N. *Foundation of Behaviourial Research*, Holt, Rinehart and Winston, INC, 1964, 73
9. Koul L. *Methodology of Educational Research* 2nd (Ed), 1988.
10. Roy W. Roberts. *Vocational and Practical Art Education*, Second Edition, Harper and Row Publishers, New York.
11. ——————. *Vocational and Practical Education : History, Development and Principles*. Harper and Row Publishers, New York, 1957.
12. Prosser A. Charles and Quigley H. Thos. *Vocational Education in Democracy*, American Technology Society. 1957.
13. NCERT. *Higher Secondary Education and its vocationalization*.
14. *Report of the Committee for Review of National Policy on Education*, 1986. Recommendations.
15. *Education and National Development: Report of the Education Commission, 1964-66*, NCERT New Delhi, March, 1971, First Edition - 1966.
16. *The Encyclopedia of Education*. The Macmilion Company and the Free Press, Vol. 9, 1971.
17. Purkait B.R. *New Education in India*, Department of Education, Kalyani University and the Associated Publishers, Ambala Cantt, India, 1987.
18. Super E. Donalt and Crites Johno. *Appraising Vocational Fitness*, Harper and Brothers, New York, 1962.

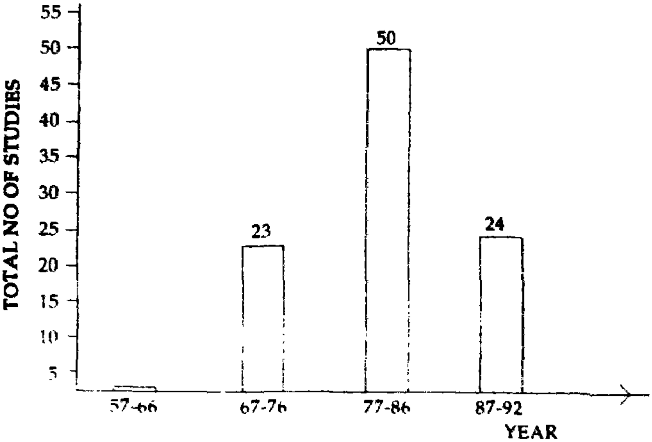

Figure 1: Yearwise Studies in Vocational Education

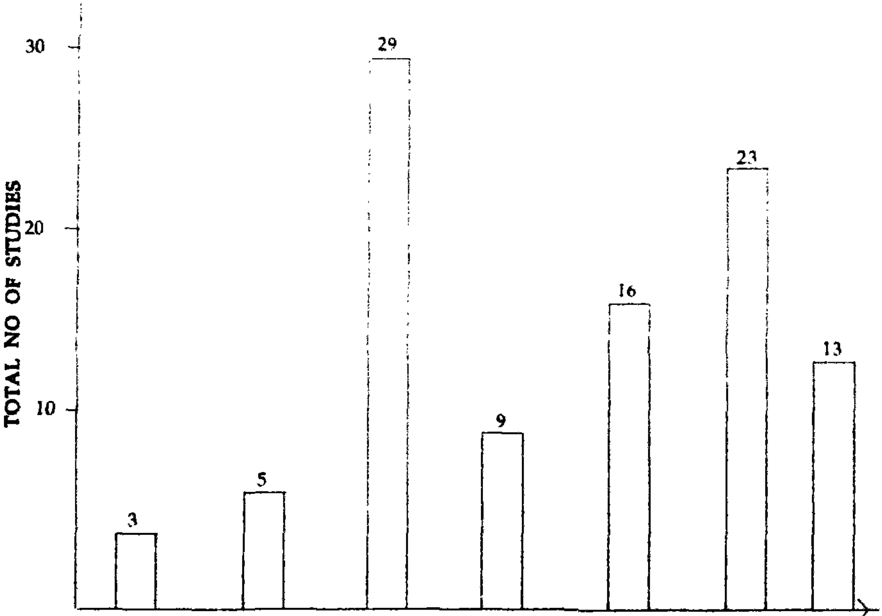

Figure 2 : Areawise Study on Vocational Education

The Strength of Character

Honourable Mr. Justice A.M. Ahmadi, Chief Justice of India, delivered the Convocation Address at the thirty-ninth convocation and special convocation of Sardar Patel University. He said, "In the final analysis, what really matters is one's character and not the outward signs of achievement. It requires character to face the unending tests that life constantly puts one through; when faced with a crisis, it is only a person possessed of true character who is able to keep his head steady whilst others around are losing theirs." Excerpts

It was during this week, 50 years ago, that the first session of the Constituent Assembly was convened. I think that every Indian citizen — and this is all the more true for those who have the benefit of education — must strive to acquaint himself with the circumstances under, and the processes by which our Constitution came to be adopted. Those of you who are graduating today are part of a generation which has never had to experience the cruelties and the sufferings of war. While this is a situation towards which the Farmers had consciously expended themselves, it may have led to your not being fully aware of the many sacrifices that were required to be made by those who were part of the freedom struggle. But, if you are not mindful and conscious of the lessons of history, and the many hurdles that our illustrious forefathers had to overcome to enable you to become free citizens of the largest democracy in the world, you will never be able to fully appreciate and enjoy the true joys of Independence and freedom.

Much has been said and written about Sardar Patel's stellar contribution to the unity and integrity of India in the years immediately after Independence in his capacity as Independent India's first Deputy Prime Minister and Home Minister. However, it is equally important to appreciate the extent of Sardar Patel's contribution to the framing of our Constitution. The Constituent Assembly had 8 major preparatory committees — Sardar Patel was a member of four of these and, indeed, was the Chairman of two such Committees. He enjoyed great influence amongst the members of the Assembly and had strong views, which were frequently expressed, on almost every aspect of our Constitution. It is for this reason that Granville Austin, a recognised expert on the framing of the Indian Constitution, stated that, along with Pt. Nehru, the Sardar was "the focus of power" in the Assembly. Austin further states "the blend in the Constitution of idealistic provisions and articles of a practical, administrative and technical nature is perhaps the best evidence of the joint influence of" Pt. Nehru and Sardar Patel.

I have sought to relate to you an aspect of the life of a great personality of our times in the hope that some of you may feel motivated towards seeking out more about his beliefs and the way he conducted himself as he went about his life. In my experience, I have found that the best lessons that one learns in the life are those that one learns after walking along the path of discovery, by expending voluntary efforts. Wisdom cannot be taught; it has to be attained through one's own experiences.

You should not for a moment think that success in the academic world is an indication or indeed a fore-runner of success in the world that awaits you outside the University's environs. In this regard I can do no better than to quote the noted historian Alfred Toynbee who observed :

> *"It is both absurd and unjust to classify a person, once and for all, as being first class or third class when he is only twenty-two years old. There are slow-growers who blossom late in life and conversely there are brilliant starters who fail to fulfil their early promise."*

History is replete with examples of personalities who achieved greatness very late in life. Albert Einstein and Thomas Alva Edison were considered academic failures. In his autobiography, The Mahatma records his indifferent academic performance. It is important that all of you realise that in the final analysis, what really matters is one's character and not the outward signs of achievement. It requires character to face the unending tests that life constantly puts one through; when faced with a crisis, it is only a person possessed of true character who is able to keep his head steady whilst others around are losing theirs. Life offers new challenges and fresh pursuits and each one of you will have to struggle hard to make it to the top. That is because life's battle is of a different kind, it has to be fought with different tools and whilst scholastic degree may be of some help, too much reliance cannot be placed upon them.

At this juncture, I would like to recall the words of Dr. Rajendra Prasad which were uttered as he presided over the last session of the Constituent Assembly.

"Whatever the Constitution may

> *or may not provide, the welfare of the country will depend upon the way in which the country is administered. That will depend upon the men who administer it. It is a trite saying that a country can have only the Government it deserves.... After all, a Constitution like a machine is a lifeless thing. It acquires life because of the men who control it and operate it, and India needs today nothing more than a set of honest men who will have the interest of the country before them.... We can only hope that the country will throw up such men in abundance."*

It is extremely disturbing that, in present times, the youth of our country have shown great reluctance to enter public life. Our nation is passing through a convulsion. I am sure that all of you are aware of most of the ills that afflict our nation. I do not propose to give you a conspectus of the many problems faced by our nation, nor indeed do I have ready solutions to offer. I can only say that we must build up a character of country-above-self. I would, however, wish to mention one facet of public life in our country that I find particularly troublesome — the issue being the fall in values in all spheres of our public life. Of the many factors that are responsible for this phenomenon, the two stand out are (i) the fall in the quality of education, and (ii) the role of muscle and money power in our system. Unfortunately, people of the right stamp have withdrawn from public life, thereby leaving the field open to people believing in the culture of the second type. What is more unfortunate is that our youth too has been indoctrinised on caste/communal, parochial and ethnic considerations because politics based on the culture of money and muscle power has penetrated student unions and is found all-pervading in most of the college elections, barring a few. This has, unfortunately, truncated the growth of the right type of value-based leadership in our next generation also. One is also witness to a sort of apathy amongst the educated intelligentsia. An eminent scholar has correctly described it as a vicious circle — persons of integrity and talent will not enter public life because of the filth and stench; and yet public life cannot be cleansed unless persons of talent and integrity enter it. I can only hope that some of those amongst you will show the strength of character required to make the decision of entering public life with an intent to upholding the noble values that have been instilled in you in this serene academic environment. Unless this happens, the labours of great leaders like Sardar Patel will fail to bear fruit. George Bernard Shaw had said that of all the negative traits that humans possess, indifference is the most inhumane of them all. Those best suited to improve out national character can ill-afford to be complacent or indifferent, or what is worse, negligent of their duties as citizens.

There can be no two opinions about the fact that education transforms a human being and plays a vital role in his development. Education of the right type widens a man's vision, frees him from narrow selfish considerations, instills self confidence and prepares him to face the challenges of time. Education acts as a great cohesive force in developing the unity and integrity of the nation. You will go out in the open market in search for jobs and you may come across divisive forces. At that time, do remember that the unity and integrity of the country comes first and every other interest, including self interest, is secondary and subordinate. I think that a spirit of belonging to the nation and placing national interest above religious, regional and self-interest, needs to be emphasised. Remember, that if the unity of the nation is jeopardised, the nation will be torn apart by divisive forces and none will be secure.

On account of the existing economic disparities in our society, there are thousands, nay millions, of our fellow citizens who live below the poverty line. They have no shelter, and no clothing; at times they do not even have money to buy a single square meal. Although the constitutional objective is to ensure equitable distribution of national wealth and to avoid concentration of wealth in the hands of a few, we must woefully concede that our poverty amelioration schemes have misfired. These poverty amelioration schemes have been lopsided, with the result that certain segments of society have benefited therefrom, while others similarly situated have been left out, perhaps on account of want of strong leadership from amongst them. Poverty is a secular phenomenon and ought to be so tackled. Comparatively speaking, you and I have been fortunate in that our families had the means to educate us. We have used society's infrastructure for our development. Society has spent huge sums for providing us with the basic infrastructure like play grounds recreation centres, schools, colleges, libraries, transport, etc., etc. All this does not come from fees paid by you. When you have settled in life, please remember this and when you think that the time to make a small contribution to society has come, remember your not-too-fortunate brethren who are suffering on account of penury. For want of access to knowledge, they are unaware of their rights and if you would spare some hours of your time, even once a week, to help them, you will have the satisfaction of having helped your brethren in distress.

University Industry Linkage

Guru Nanak Dev University, Amritsar, has offered its research infrastructure to the industry for building a more useful link. This was revealed by the Vice Chancellor, Dr. Harbhajan Singh Soch, who presided over a meeting under the aegis of university industry linkage programme recently.

Dr. Soch said under the programme the university would soon establish a secretariat for proper liaison with the industry and would make available its expertise in the fields of applied chemistry, textile, biotechnology, food sciences, pharmaceuticals, sugar technology and management and computer courses.

The Vice Chancellor pointed out that the university research projects would now be need-based and would help the industry sort out their problems. He suggested that small-scale units should derive maximum benefits from the infrastructure available with the university.

Dr. Inder Pal Singh, Pro Vice-Chancellor, in his welcome address, said the university in future would start only those courses which were need based. He said that the advances made by the science and technology all over the world in various fields should reach the masses.

Dr. S.S. Parmar, Coordinator of University-Industry Linkage Programme, giving details of the facilities available at the Guru Nanak Dev University said the U.G.C. had repeatedly been impressing upon the Universities to generate and mobilise resources for maintaining their financial health. He said the university had already established Textile Service Centre with the assistance of Ministry of Textiles, Govt. of India. In this centre textile samples sent by the textile industry were tested at very reasonable rates. Earlier, the industrialists had to run to Bombay for this purpose. He said Pollution Testing Laboratory had also started functioning.

The Coordinator said machinery worth one crore rupees had been installed in the Food Science Department where the work of food analysis would be started very shortly. He said that books worth Rs.1.50 lac had already been purchased under this programme and a special cell of books and journals was being created for this purpose. Industrialists could also contribute to strengthen the library facility under Research and Development Programme.

Mr. Dilbir Singh, a prominent industrialist of Amritsar, on behalf of the industry, congratulated the Vice Chancellor, Dr. H.S. Soch and the faculty members of the Guru Nanak Dev University for starting Textile Service Centre and Pollution Testing Laboratory at the University campus. He said the Industry of this region shall benefit from these facilities.

He also suggested that Capsule Courses for the subordinate staff working in various industries should be started.

Other industrialists, who spoke on the occasion, suggested establishment of Consultancy Centre, introduction of Capsule courses for industrial workers, starting a course in Packaging Technology and publishing a brochure containing different courses and facilities available at the campus.

Health Education and Oral Hygiene

The Government is reported to have initiated a pilot project for dissemination of health education and promotion of oral hygiene, to improve the health of the marginalised sections of society. This was stated by the Union Health and Family Welfare Secretary, Mr. P.P. Chauhan while inaugurating the World Congress on Orthodontics and the 31st Indian Orthodontics Conference held in New Delhi recently. The theme of the Congress was "The next step forward". Mr. Chauhan also hinted at a new-look health policy. The policy would work on the premise that "prevention is better than cure".

Mr. Chauhan said the aim of the project — presently being conducted in five districts of Himachal Pradesh, Rajasthan, Jammu and Kashmir, Punjab and Delhi — was to spread the message all over the country so that it reached the poor and under privileged sections.

He expressed concern over the sudden increase in dental diseases and stressed the need to integrate the preventive, curative and educational oral health care programmes into the existing system. He also urged orthodontic experts attending the congress to evolve a treatment which was simple and cost-effective.

Dr. R.M. Ricketts, known as the, "Father of Orthodontics," hoped the congress would help promote global orthodontics.

In his Presidential address, Dr. V. Surendra Shetty, President of Indian Orthodontic Society, listed the reasons for the slow development of orthodontics in the country as the absence of qualified teachers in the subject and the exorbitant cost of materials needed in its practice. Even dental colleges found it difficult to get trained orthodontic teachers.

Dr. Pradip Jayna, Congress Chairman, said that 60 to 70 percent of the country's population suffered from abnormal teeth problems which could be easily prevented by shunning such habits as breathing through the mouth, thumb sucking and bottle feeding. Regular breast feeding of children and periodic dental check-ups after the age of five would also help in preventing such abnormalities.

Workshop on Technology Management

Bharati Vidyapeeth's Institute of Management and Entrepreneurship Development (IMED), Pune proposes to organise a National Workshop on Technology Management on 5-6 March 1997. The theme of the Workshop is "Technology Management".

The objectives of the workshop are (i) to encourage Industry-Institute partnership programme; (ii) integrate Business, Technological and Strategic Management; (iii) to study and evaluate the temper and tempo of corporate groups after post liberalization phase; (iv) to evolve Industry - Institute consensus on various emerging issues; and (v) to identify thrust areas for joint programmes of Research and Development between Industries and Institutes.

The workshop will focus on the advantages of collaboration between Scientific, Managerial and Technological aspects of Technology Management. There will be interaction between the academic curriculum experts imparting management education and practising managers, administrators and heads of research and development organizations.

Further details may be had from the Chairman of the Workshop & Director, Bharati Vidyapeeth's Institute of Management and Entrepreneurship Development, Erandwane, Pune-411038.

National Seminar on Philosophy

A national seminar on 'the concept of person' sponsored by the Indian Council of Philosophical Research, New Delhi was recently held in the Department of Philosophy, Gauhati University. Renowned philosophers from the different universities of India, who attended the seminar, deliberated that the philosophy of person and personal identity had been studied in a multi dimensional way. The person was not a 'limit' of the world, it could itself be a world. The western concept of 'person' had been understood in India as 'Purusha' — a psycophysical subject, they argued.

The seminar was directed by Dr. Nilima Sharma, Professor and Head, Department of Philosophy, Gauhati University.

Prof H L Duorah, Vice Chancellor, Gauhati University, inaugurated the seminar while Prof S K Sen of North Bengal University presided. The keynote address was delivered by Prof S P Banerjee, the B N Seal Professor of Calcutta University. Prof K K Bagchi of Visva Bharati University released the souvenir.

In the ten sessions lively discussions were held and research papers on various disciplines of philosophy were presented.

IUCAA Associateship Programme

The Inter University Centre for Astronomy and Astrophysics (IUCAA) invites applications for its Associateship Programme. Under this programme a faculty member of a university or a postgraduate department in a college can visit IUCAA for periods of short and long durations over a span of three years to develop his/her interest and expertise in astronomy and astrophysics through any of the following means : (i) the use of IUCAA's in-house facilities like the specialized library, the advanced computing systems, etc towards research project already undertaken; (ii) discussion with IUCAA's core academic staff, post-doctoral fellows and visiting experts for teaching and research assignments as well as joint projects; (iii) participation in observational programmes in national and international astronomical facilities, and data reduction; (iv) carrying out R & D activities in astronomical instrumentation; and (v) joint research projects with members of other universities/postgraduate colleges.

The last date for receipt of applications is April 30, 1997. Further details may be had from the Coordinator, Core Programmes, IUCAA, Post Bag 4, Ganeshkind, Pune-411 007.

Turkish Delegation Visits Jamia Hamdard

A Turkish delegation of Vice-Chancellors of 7 Universities along with the Head of the Turkish Higher Education Council recently visited the Hamdard University Campus. His Excellency, the Ambassador of Turkey Mr. Sami C. Onaran also accompanied the delegation. The delegates visited most of the Departments, Faculties, Library, Hospital, Labs and other units of interest. There was also a discussion between delegates & University officials regarding the possibility of collaboration between Turkish University and Hamdard University in future. Prof. Allauddin Ahmad, Vice-Chancellor of Hamdard University briefed the delegates about the contribution of the great Philanthropist, Janab Hakeem Abdul Hameed Saheb (Chancellor) and the availability of academic facilities including Unani Medicine in Jamia Hamdard. Prof. Kemal Guruz, President, Turkish Higher Education Council while appreciating the activities of the Universities also expressed the desire for having collaboration with Turkish Universities.

News from AICTE

Mandatory Accreditation for Engg Courses

All India Council for Technical Education has recently given accreditation tag for select 36 engineering courses in colleges throughout the country to improve standards of technical education.

The AICTE's National Accreditation Board (NAB) which had earlier given option for engineering colleges to meet the criteria set by the AICTE to get the status, has know made this mandatory. This was stated by the AICTE Chairman, Dr. Rama Gowda on his recent visit to Bangalore. He said unless the engineering colleges run the courses to the standards prescribed by the NAB, AICTE would not give accreditation. "This norm has been modelled on a policy adopted by an American University. Henceforth, there will be demand only for accredited courses and accredited students. The standard prescribed by the NAB would be of world standard and therefore, an AICTE accredited student would be on par with world's best engineering student", he said.

Dr. Gowda said the AICTE would not soft peddle with engineering colleges as a compromise in quality on technical education in this era of globalisation and industrialisation will prove costly.

While giving financial assistance, the AICTE would give priority for colleges which have bagged accreditation status for courses run by them. "Education should reflect the needs of industry. Therefore, industry would have a big say in the NAB", Dr. Gowda said.

Explaining why the AICTE was emphasising the need for accreditation, the Chairman said a student from a prestigious institution like IIT and from a thatched roof college got the tag of an engineer. To overcome this gap, bringing engineering courses in bracket of accreditation had become necessary, he maintained.

Dr. Gowda said that the AICTE proposed to conduct an international workshop to elicit the views of academicians as well as people from industry on how to make Indian engineering education relevant to the market needs and also bring it on par with world standards. The workshop, likely to be held in Bangalore or Shimla during June or July, would be a forum for corporate sector to express its views to improve technical education, he added.

Stating that the AICTE was slowly giving a 'shake' to professional colleges that come under its purview, the Chairman said a committee of the AICTE had already imposed moratorium on commencing post graduate diploma business management courses. The moratorium would be in force for next three or five years. "Until we are convinced of the need for more number of quality students, we are not going to allow institutions to run the courses according to their whims and fancies", he said.

He further said the AICTE was fully geared up to face any legal complications following the blanket ban on commencing new PG diploma courses in business management. Institutions falling below the standards set by the AICTE would be given one more chance to improve and still if they failed to comply, recognition would be withdrawn, he clarified.

Stating that the AICTE has

tightened its vigilance on educational institutions, Dr. Gowda said each State had an AICTE committee where representation had been given to top level academicians to monitor the functioning of colleges.

The AICTE Chairman said unlike before, now state governments had been given freedom to decide about the requirement of new engineering colleges according to its needs. However, the AICTE would remain as the final authority to give permission for setting up of engineering colleges. "Involvement of state governments in decision making lessen friction between states and AICTE. After all, it is the state which can decide about its technical requirements. So, due weightage would be given for states in policy matters while making no compromise in quality of education", he said.

With regard to uniform fee structure as well as syllabus for engineering courses, he said though the AICTE had prescribed a fee structure and the same had been conveyed to Supreme Court, it was left for states to have its own formula.

News from UGC

Countrywide Classroom Programme

Between 22nd and 28th February, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

22.2.97

"Statistics-II: Stratified Random Sampling"

"Dashavatara-I"

"Towards Cleaner and Greener Environment-I"

23.2.97

"Theatre Architecture-VII : Chinese Theatre"

"Your Form is My Creation"

25.2.97

"Question Time"

"Cranial Sonography"

27.2.97

"Wild Memories-III"

"Communicators of Army: Excellence through Training"

IInd Transmission

1.00 p.m. to 2.00 p.m.

22.2.97

"Understanding Cinema-V: Lighting"

"The Story of Indian Painting-III Mughal Miniature"

"Thappattam: A Leading Dance form in Tamil Street Theatre"

23.2.97

No Telecast

24.2.97

"Agro-Forestry in Watershed Management"

"Classical Mechanics-XI: Angular Momentum Conservation"

"Rupee Devaluation"

25.2.97

"Integral Pedagogy Process-IV: Reflection Catalysis: Its Impact on Chemical Industry"

"Low Level Laser Therapy: Lasers in Medicine"

26.2.97

"Emerging Issues in Science and Technology"

"The Great Encounter-I: Victoria Ocampo and India"

"Iron in the Cells"

JAIN VISHVA BHARATI INSTITUTE (DEEMED UNIVERSITY)
LADNUN 341 306, DISTRICT- NAGAUR, RAJASTHAN

Applications with complete bio-data are invited for the following posts so as to reach the undersigned on or before 15-3-1997. All posts in U.G.C. scales. Appointment on contract preferred. Higher start to deserving candidates. Special consideration to candidates belonging to SC, ST, OBC and Women.

1. **Social Work** : Professor (one), Reader (one), Lecturers (two) - one reserved for Scheduled Caste.
2. **Prakrit Language & Literature** : Professor (one), Reader (one), Lecturer (one) reserved for Scheduled Caste.
3. **Science of living, Preksha Meditation & Yoga**: Professor in applied Psychology (one), Reader in Physiology (one), Lecturer (one) reserved for Scheduled Caste.
4. **Non-violence, Peace & Anuvrat**: Professor (one) with specialisation in Peace Studies/Non-Violence application, Lecturer (one) reserved for Scheduled Caste.
5. **Jainology & Comparative Philosophy** : Reader (one) in Buddhist Studies, Reader (one) in Vedic Studies, Reader (one) in Jain Ecology, Lecturer (one) reserved for Scheduled Caste.

VICE-CHANCELLOR

27.2.97

"Electromagnetic Pollution: Incemic '95"

"Literature in Society Renaissance-III: View of Women"

"Soil Testing"

28.2.97

"Youth and Democratic Values-II"

"Air Check"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

24.2.97

"राग संगीत - VI : बेहाग"

26.2.97

"धरती हिल जाये, जान न जाये"

28.2.97

"बोलते पत्थर : किराडु"

News from Abroad

GIS Training Programme

The Asian Institute of Technology, Bangkok proposes to organise a three-week Training Program on PC Based Geographic Information Systems (using *GIST, ARC/INFO & IDRISI*) on 14 April - 2 May, 1997. The course is directed towards Professionals from all sectors involved in the preparation and planning of spatial and non-spatial information within their organizations.

It aims to introduce to Professionals the concepts and skills required to use GIS for systematic analysis of environmental and natural resource problems. The emphasis will be on the concepts and methods, rather than on comprehensive software training, enabling trainees to apply the approach to the specific conditions of their own office environment.

The course contents include: (i) GIS Overview; (ii) Vector Data; (iii) RDMBS; (iv) Arc View; (v) Spatial Database Construction; (vi) Map Integration & Flow Charting; (vii) Modelling in ARC/INFO; (viii) Digital Elevation Model (DEM); (ix) Cartographic Techniques & ARC/INFO; (x) Introduction to Raster Data Analysis; (xi) Image Processing Concepts — An Input to GIS; and (xii) Methods and Execution of GIS Projects.

Further enquiries on this course and other RS/GIS related programs and services can be addressed to : The Manager & Program Specialist, GIS Applications Centre (GAC), Space Technology Applications & Research (STAR) Program, School of Environment Resources & Development (SERD), Asian Institute of Technology (AIT), G.P.O. Box 2754, Bangkok 10501, Thailand.

INDIAN STATISTICAL INSTITUTE
203 B.T.Road, Calcutta-700035
ADMISSION NOTICE 1
SESSION : 1997-98

Invites applications for the following Courses/Fellowships (1) 3-year B.Stat. (Hons.), (2) 2-year M.Stat., (3) 2-year Master of Science (M.S.) in Quantitative Economics, (4) 2-year M.Tech. in Computer Science, (5) 2-year M.Tech. in Quality, Reliability and Operations Research, (6) Junior Research Fellowships: Statistics, Mathematics, Economics, Computer Science and Communication Sciences, Theoretical Computer Science, Geology, Biochemistry, Agricultural Science, Botany, Demography, (7) 2-year Specialist Development Programme in SQC and OR, (8) 1-year Certificate/2-year Diploma Course on Operation and Programming on Automatic Data Processing Equipment.

A MORE DETAILED ADVERTISEMENT WAS PUBLISHED IN THIS JOURNAL ON 10 FEB., 1997.

Complete information on Scope, Duration, Eligibility, Stipend/Tuition fee is available in the prospectus. Prospectus and application form can be obtained from the Dean of Studies, Indian Statistical Institute, 203 Barrackpore Trunk Road, Calcutta-700 035, by paying an amount of Rs. 80/- in cash (between 11.00 a.m. *and 2.00 p.m. on working days from Monday to Friday*) or by bank draft in favour of "Indian Statistical Institute" payable at Calcutta (proper). Postal orders, money orders and cheques will not be accepted.

Addendum : Further to the advertisement mentioned above, applications are also invited for Junior Fellowships (JRF) in Theoretical Physics and Applied Mathematics. **Eligibility**: Master's degree in the Physics/Mathematics/Statistics/Applied Mathematics. Candidates applying for JRF in Theoretical Physics and Applied Mathematics must write on the top of the first page of the application form "**APPLICATION FOR JRF IN THEORETICAL PHYSICS AND APPLIED MATHEMATICS**".

Last date for receiving requests for application forms : Monday, 3 March 1997.

BOOK REVIEW

Employment in Andhra Pradesh

Mohammed Muzammil*

S. Sudhakar Reddy and K. Laxmi Narayana, Eds. Review of Employment Trends and Programmes in Andhra Pradesh: Potential Impact of Liberalisation. Hyderabad, Booklinks Corporation, 1995. Pp. viii+274. Rs. 250/-(HB).

This book presents the papers and proceedings of a Workshop held at Centre for Economic and Social Studies, Hyderabad in August, 1994. The first part of the book comprise six papers in all prepared on the theme : "Employment Situation and Policy Initiative in Andhra Pradesh" and the *second part contains 'a verbatim* record of proceedings'. The six papers are contributed by G. Parthasarthy, Gautam Kumar Mitra, S. Laxmi Narayana and C. Ravi, R. Radhakrishna and others, M.C. Swaminathan and S. Mahendra Dev; and analyse in detail various aspects of employment situation in Andhra Pradesh.

The papers cover 132 pages while the rest of the book is a verbatim presentation of the discussion spread over three academic sessions (besides the inaugural and the concluding ones) on the following themes : (a) Employment in Agriculture and Allied sectors, (b) Employment in Industrial sector, and (c) Employment *intervention programmes.*

The book present not only the presidential remarks in each session and subsequent discussion but also incorporate the Rapporteurs' report for each of these sessions which are concise, to the point and well written. A list of 50 participants (with full addresses) is given in the end.

All the papers are loaded with secondary data on various aspects of employment and related issues in the State of Andhra Pradesh and immediately give an impression of their having been 'well researched'. Most of these are micro-studies in which only a few might be more interested and these may not capture the interest of common readers of the book.

On the other hand, the verbatim proceedings of lectures and discussions make an effortless reading and immediately remind the reader of the difference between 'laborious writing' and 'natural speech'. It proves once again that if lectures/speeches are transcribed, these would be more interesting and useful for non-specialists.

The papers conclude : (a) growth of employment has considerably been less than the growth of labour force, (b) public intervention programmes provide only about one-fifth of required employment, (c) more employment can be generated locally (p. 26), (d) growth rate of employment differs from region to region and a shift is visible in employment from agriculture to construction (p. 54), (e) in rural areas, the share of self-employment has increased; in non-agricultural sector, there is a fall and there is a steady decline in the growth of employment in organised sectors (p. 71), (f) the incidence of unemployment is found to be higher in irrigated zone (p. 92) (It is opposite to the general conclusion that irrigation increases the employment content of land), and (g) rural non-farm and urban informal sectors offer greater potential of employment in Andhra Pradesh (p. 128).

The inaugural address by Mira Seth, Member Planning Comission and the valedictory address by T.S. Papola, Adviser, Planning Commission are remarkable portions in the proceedings. Mira Seth spells out how the Govt. of India has been busy in tackling the problem of unemployment through appointment of committees after committees, submission of their reports and adoption of their recommendations at the National Development Council (NDC) meetings and subsequent issue of guidelines to various ministries and state governments. (!) (p. 138). She, *inter alia*, emphasises the expansion of World Bank assisted sericulture project in the state for creation of more jobs (p.145). She also stressed the need for bridging the gap of gender inequality and promotion of tourism in A.P. (Pp. 146-47).

Mentioning the economic reforms in the country, T.S. Papola says : "There are lots of questions on that and may be rightly we came to the conclusion that we cannot really say very much about the effect that liberalisation

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Reader in Economics, Lucknow University, Lucknow-226 007.

or economic reforms will be producing on employment or unemployment situation .... if one is talking of issues like equity, Market, in the given institutional structure that we have in this country, cannot deliver equity. If we want to deliver equity there will have to be interventions. Market will have to be a sort of regulated and disciplined". (Pp. 258-59)

Regarding exit policy, Papola says : "I do not see any reason why enterprises should be burdened with much larger number of workers than they require (p.260)." The issue basically is of the public sector where probably the decision has to be much more in political terms rather than in just the legal terms. Even if you amend the law, you will still have to deal with unions...and political influences that go into the unions and, in particular, industrial relations situation" (*Ibid*).

Admitting the serious lapses and financial irregularities in IRDP implementation, Papola feels that irrespective of this, these programmes are making a significant dent on the rural employment and poverty situation (p. 262).

It is encouraging to note that Andhra Pradesh is doing better than the national average in poverty alleviation (Mira Seth, p.140) and in adopting, without central help, the Employment Guarantee Scheme by the state government *on its own initiative* (Papola, p. 264).

Rapporteurs' reports are outstanding. They state : A majority of participants felt that the New Economic Policy might adversely affect the employment prospects in the short run (p. 180). It was suggested that NGOs had to be involved in the planning, implementation and monitoring of employment strategy (p. 181). State's role was emphasised (even under liberalised system) and imposing 'full confidence in the market' was criticised (p. 214). Participation of people and debureaucratisation were noted as being important for the success of employment schemes (p. 255).

The over-all printing of the book is of high order. Tables of data and footnotes, however, are wastefully spread over many pages (vide, for instance, Tables on pages 41,42,43 and notes on page 129). These could have been compressed to add to the presentation of the book. On the reddish dark brown jacket of the book, the title printed in light golden colour gives a very dim impression. The same is the case with blurbs making these a little worse due to being in small prints. A contrasting colour combination could have made the get-up of the book impressive.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
March 6-8, 1997	CALIBER-97	Theme : IT Applications in Academic Libraries in India : With Emphasis on Network Services and Information Sharing	INFLIBNET and Thapr Institute of Engineering and Technology, Patiala	S.M. Salgar, INFLIBNET Centre, P.B. No. 4116, Navrangpura, Ahmedabad-380 009 OR Prof. Janak Raj, University Librarian, Thapar Instt. of Engineering and Technology, Patiala-147 001
March 13-15, 1997	Restructuring of Public Enterprises at State Level	To provide an approach to initiate plans of action to restructure State Level Public Enterprises *[SLPEs]*.	School of Management, Pondicherry University, Pondicherry	Dr. R. Prabhakara Raya, Workshop Coordinator. School of Management, Pondicherry University, Pondicherry-605 014
July 23-25, 1997	International Seminar on Researches in Teacher Empowerment and School Effectiveness at the Primary Stage	Theme . Teacher Empowerment and School Effectiveness	National Council of Educational Research and Training, New Delhi	Dr. Ved Prakash Prof & Head, DPEPCRG. NCERT, Sri Aurobindo Marg, New Delhi-110 016

RESEARCH IN PROGRESS

A list of scholars registered for doctoral degrees in Indian Universities

BIOLOGICAL SCIENCES

Biochemistry

1. Dake, Manjusha Sudhakar. **Biomass conversion - α glucan - β - glucan complex and ethanol fermentation in yeast.** Shivaji. Dr N B Patil, Department of Biochemistry, Shivaji University, Kolhapur.

Biology

1. Sheeja, K. **Studies on antagonistic streptomycetes associated with marine algae of Kovalam Coast. Kerala.** Dr K Dhevendran, Prof, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram.

Botany

1. Chougule, Padamaja Mahavir. **Studies on the fossil flora of Pranhita - Godavari Valley.** Shivaji. Dr B A Vagyani, Department of Botany, Shivaji University, Kolhapur.

2. Khilare, Chandrakant Jagannath. **Aerobiology of Kolhapur.** Shivaji. Dr (Mrs) S S Chitnavnis, Department of Botany, Shivaji University, Kolhapur.

3. Khomane, Balasaheb Vithoba. **Wasteland development : Assessment of growth of woody plants in wasteland.** Shivaji. Dr (Smt) L J Bhosale, Department of Botany, Shivaji University, Kolhapur.

4. *Salunkhe, Shekhar Shankarrao.* **Influence of waterlogging on some physiological aspects of Soyabean (Glycine Max (L) Merr.).** Shivaji. Dr P D Chavan, Department of Botany, Shivaji University, Kolhapur.

5. Tamboli, Rustum Allabakash. **Studies on the fossil flora of the Sivaganga formation.** Shivaji. Dr B A Vaggyani, Department of Botany, Shivaji University, Kolhapur.

EARTH SYSTEM SCIENCES

Environmental Science

1. Dalvi, Hemant Gopal. **Utilization of earthworms in waste recycling and heavy metal pollution.** Shivaji. Dr N K More, Department of Zoology, Shivaji University, Kolhapur.

2. Unnikrishnan, P. **Investigation on the influence of water quality parameters on the spreading of water weeds in inland water bodies of Kerala.** Kerala. Dr V Sobha, Head, Department of Environmental Sciences, University of Kerala, Kariavattom.

Geology

1. Kajave, Arvind Ramchandra. **Geomorphological and related studies of the Vashisti River basin, Ratnagiri District, Maharashtra.** Shivaji. Dr P T Sawant, Walchand College of Arts & Science, Solapur.

ENGINEERING SCIENCES

Civil Engineering

1. Patil, Ushadevi Ganpatrao. **Effect of soil structure interaction on the response of tall plane frames subjected to seismic loading.** Shivaji. Dr K T Krishnaswamy, Walchand College of Engineering, Sangli.

2. Ullagaddi Prabhuling Basappa. **Effect of compressibility of pore fluid on consolidation.** Shivaji. Dr G V Walvekar, 6-3, Lotus Apartment, 159/A, Railway Line, Solapur.

Electronics Engineering

1. Kharadkar, Ravindra Digambar. **Development of general technique for optimal tuning of PID controller.** Shivaji. Dr P J Kulkarni, Walchand College of Engineering, Sangli.

2. Kulkarni, Dinesh Balakrishna. **Iterated function system for image coding.** Shivaji. Dr P J Kulkarni, Walchand College of Engineering, Sangli.

MATHEMATICAL SCIENCES

Mathematics

1. Lokhande, Arun Dattatray. **A study of ideals in lattices and semi-lattices.** Shivaji. Dr (Smt) Y S Pawar, Department of Mathematics, Shivaji University, Kolhapur.

2. Mane, Dattatraya Nivrutti. **A study of ideals in BCK-algebras.** Shivaji. Dr (Smt) Y S Pawar, Department of Mathematics, Shivaji University, Kolhapur.

Statistics

1 Bhat, Dayanand Dattatraya. **On applications of neural networks in statistical ecology.** Shivaji. Dr S R Kulkarni, Department of Statistics, Shivaji University, Kolhapur.

MEDICAL SCIENCES

Medical Microbiology

1. Shaikh Nasira Khaled. **Study of medically important candida species with special reference to different typing methods and virulence testing in laboratory animals** Shivaji Dr V L Jahagirdar, Dr V M Medical College, Solapur

Medicine

1. Patil, Sunil Bandopant. **Evaluation of pulse diagnosis in clinical ayurvedic practice.** Shivaji. Dr D R Bhakare. Bhakare Wada, 354, Somwar Peth, Satara.

Pharmacy

1. *Ipe Ninan.* ***Serotonin-dopamine receptor mechanism in*** **the action of newer antipsychotic drugs.** Panjab. S K Kulkarni, Prof, University Institute of Pharm Sciences, Panjab University, Chandigarh.

PHYSICAL SCIENCES

Chemistry

1. Burungale, Shivaji Haribe. **Analytical applications of cyanex compounds.** Shivaji. Dr B S Mohite, Department of Chemistry, Shivaji University, Kolhapur.

2. Chavan, Baburao Dattatraya. **Spectroscopic and dipole moment studies of some Schiff's bases.** Shivaji. Dr P P Hankare, Department of Chemistry, Shivaji University, Kolhapur.

3. Dighe, Surendra Shankar. **Volumetric and viscosity studies of electrolytes in water.** Shivaji. Dr M D Bhand, Department of Chemistry, Shivaji University, Kolhapur.

4. Jadhav, Subhash Anandrao. **Absorption and fluorescence studies in multicomponent organic systems**. Shivaji. Dr S R Patil, Reader, Department of Physical Chemistry, Shivaji University, Kolhapur.

5. Joseph, Swaroop Mathen. **Biomimetic cycloadditions in organic synthesis**. Kerala. Dr G Vijayakumaran Nair, Deputy Director, Regional Research Laboratory, Trivandrum.

6. Kulkarni, Pramod Shankarrao. **Synthesis and characterisation of polymers containing pendant metal binding groups**. Shivaji. Dr S V Lonikar, Department of Chemistry, PGTC, Solapur.

7. Lokhande, Tukaram Namdeo. **Applications of liquid ion exchangers to inorganic analysis : Extraction separation of platinum metals and gold**. Shivaji. Dr M B Chavan, Department of Chemistry, Shivaji University, Kolhapur

8. Manoli, Parmanand Shivanand. **Analytical applications of guanylhylhdrazones**. Shivaji. Dr (Smt) S G Kawatkar, Department of Chemistry, Shivaji University, Kolhapur.

9. Mary Hose. **Metal complexes of some multidentated ligands**. Kerala. Dr R Krishnan, Government College for Engineering, Trivandrum.

10. Nazeera Beevi, A. **Coordination properties of certain polymer bound ligands**. Kerala. Dr T Rahdakrishnan, Lecturer, Department of Chemistry, University College, Thiruvananthapuram

11. Patil, Kalpana Pasgonda. **Vanadium (V) oxidation of some acid hydrazides**. Shivaji. Dr J B Patil, Department of Chemistry, Shivaji University, Kolhapur.

12. Patil, Shakuntala Shashikant. **Hexacyanoferrate (III) oxidation of some acid hydrazides in perchloric acid**. Shivaji. Dr J B Patil, Department of Chemistry, Shivaji University, Kolhapur

13. Pramada, P N. **Synthetic zeolites and kaolinite as precursors for aluminosilicate ceramics**. Kerala. Dr (Mrs) Sathy Chandrasekhar, Regional Research Laboratory, Trivandrum.

14. Rajesh Kumar, S. **Studies on high surface area ceramic oxide**. Kerala. Dr K G K Warrier, Regional Research Laboratory, Trivandrum.

15. Samuel, Jadu. **Thermal studies on some irradiated inorganic compounds**. Kerala. Dr C James, University College, Trivandrum.

16. Shabadi, Channappa V. **Synthesis and study of B-lactam antibiotics**. Shivaji. Dr A R Shelar, Department of Chemistry, Shivaji University, Kolhapur

17. Shelar, Balkrishna Ashok. **The characterisation of new β-lactam antibiotics and development of analytical methods for pharmaceutical assays**. Shivaji. Dr K J Patil, Department of Chemistry, Shivaji University, Kolhapur.

18. Shelar, Milind Ashok. **Synthesis and biological activity of some new pyrimidine and quinoline derivatives**. Shivaji. Dr M B Deshmukh, Department of Chemistry, Shivaji University, Kolhapur.

19. Tukaram, Shankar Jangam. **Ion exchange separation and kinetic studies of some toxic metal ions in mixed media**. Shivaji. Dr S V Kulkarni, Department of Chemistry, Shivaji University, Kolhapur.

20. Viswanathan, M. **Characterization of some new metal complexes**. Kerala. Dr G Krishnan, University College, Trivandrum.

Physics

1. Akhtar Mohamad Husen Shaikh. **Studies on electrical and magnetic properties of Mg-Zn-Li ferrites**. Shivaji. Dr B K Chougule, Department of Physics, Shivaji University, Kolhapur.

2. Chaudhari, Nandkishor Damodar. **Permeability studies on Li substituted Ni Zn Cu substituted Mn-Zn ferrites**. Shivaji. Dr S R Sawant, Department of Physics, Shivaji University, Kolhapur.

3. Chavan, Anandrao Nivrutti. **Study of ionospheric scintillations at Kolhapur**. Shivaji. Dr C S Shalgaonkar, Department of Physics, Shivaji University, Kolhapur.

4. Fulari, Vijay Janardhan. **Double exposure holographic interferometry and its applications**. Shivaji. Dr M B Dongare, Department of Physics, Shivaji University, Kolhapur.

5. Jadhav, Sidheshwar Atmaram. **Synthesis, structural and studies on electrical and magnetic properties of Cu-Zn-Li ferrites**. Shivaji. Dr B K Chougule, Department of Physics, Shivaji University, Kolhapur.

6. Kale, Sampat Sharadrao. **Studies on preparation and characterization of Cds, CdSe and HgS films**. Shivaji. Dr C D Lokhande, Department of Physics, Shivaji University, Kolhapur.

7. Lokhande, Balkrishna Jagannath. **Preparation of cadmium oxide by spray pyrolysis and it's conversion into cadmium chalcogenide films**. Shivaji. Dr M D Uplane, Department of Physics, Shivaji University, Kolhapur.

8. Mali, Dilip Sadashiv. **Studies on computer simulation of least mean square algorithm and its different forms**. Shivaji. Dr M D Uplane, Department of Physics, Shivaji University, Kolhapur.

9. Mane, Rajaram Sakharam. **Preparation and characterisation of nanocrystalline Bi_2S_3, Sb_2S_3 and AS_2S_3 thin films**. Shivaji. Dr C D Lokhande, Department of Physics, Shivaji University, Kolhapur.

10. Mehdi, Hajivaliei. **X-ray emission cross section and trace element analysis using proton induced X-ray emission (PIXE) technique**. Panjab. Prof I M Govil and Dr K P Singh, Department of Physics, Panjab University, Chandigarh.

11. Padal, Narasingh Trimal. **Synthesis and characterisation of LaFe and LaCr substituted $BaTiO_3$**. Shivaji. Dr P B Joshi, Department of Physics, Shivaji University, Kolhapur.

12. Patil, Pandurang Ramchandra. **Studies on electro-chromic and phtoelectro-chemical cells based on sprayed WO3 thin films**. Shivaji. Dr P S Patil, Department of Physics, Shivaji University, Kolhapur.

13. Torane, Appasaheb Pandharinath. **Studies on preparation and characterisation of electro-deposited Bi_2 Se_3, Sb_2 Se_3 and As_2 Se_3 thin films**. Shivaji. Dr C H Bhosale, Department of Physics, Shivaji University, Kolhapur.

14. Uplane, Megha Mahadev. **Preparation and physico-chemical characterization of tungsten dichalcogenide thin films prepared by spray pyrolysis technique**. Shivaji. Dr P S Patil, Department of Physics, Shivaji University, Kolhapur.

EDUCATION NEWS INDEX

A list of select articles and editorials on education from newspapers received in the AIU Library during January 1997

EDUCATIONAL PHILOSOPHY

Vanchinathan, N. Upholding spirituality through education. **The Hindu** 3.1.97.

EDUCATIONAL PSYCHOLOGY

Amaravadi, Chandra S. Reaching out to the sincere student. **The Hindu** 7.1.97.

Ilahi, Raza. Learning the campus lingo. **The Pioneer** 29.1.97.

Sharda Prasad, H Y. An illiterate can be cultured. **Deccan Chronicle** 12.1.97.

Swaminathan, A V. Relevance of punishments at school. **The Hindu** 14.1.97.

EDUCATIONAL SOCIOLOGY

Gill, S S. The reservation muddle. **The Hindu** 29.1.97

Venkata Subbaiah, M. Towards social justice by 2000 AD. **The Telegraph** 20.1.97

EDUCATIONAL POLICY & PLANNING

Anand Sarup. Basic issues for planning. **The Hindu** 28.1.97.

Dhanoa, H S. Education for all a dream. **The Tribune** 13.1.97.

JOB AFTER graduation (Editonal). **Deccan Herald** 29.1.97.

NEED FOR commitment (Editorial). **Deccan Herald** 30.1.97.

Umesh, Nila. All round human development needed. **The Pioneer** 11.1.97.

EDUCATIONAL ADMINISTRATION

AILING UNIVERSITIES (Editorial). **The Assam Tribune** 30.1.97.

Jenkins, Simon. Keep colleges collegiate. **The Statesman** 16.1.97.

MUFFLING THE teacher's voice (Editorial). **The Tribune** 7.1.97.

Pillai, J K. Motivation for better academic performance. **The Hindu** 21.1.97.

Raghuveeran, B and Kanchana, R. School administration. **The Hindu** 7.1.97.

Sarkar, Chanchal. What ails Indian universities. **The Tribune** 5.1.97.

Sharma, B K. Today, students need not attend classes' **The Statesman** 31.1.97.

Shastri, P D. Educational scenario. **The Tribune** 3.1.97.

Subramanyam, K. The phenomenon of empty classrooms. **The Hindu** 14.1.97.

Suryanarayana, G V. Mocking the merit, mauling the deserved. **The Telegraph** 20.1.97.

EDUCATION & POLITICS

Barpujari, Basanta Kumar. Should students be a political **The Assam Tribune** 21.1.97.

Mitra, Swati. From red to saffron. **The Pioneer** 8.1.97.

CURRICULUM

Bhattacharjee, Swati. Out of the closet. **The Telegraph** 7.1.97.

LANGUAGE & LANGUAGE POLICY

Chellappa, Paul. Making grammar easy. **The Hindu** 21.1.97.

Subhalakshmi Narayanan, H. The Sanskrit drama. **The Hindu** 28.1.97.

WHAT'S BLACK English ? (Editorial). **Free Press Journal** 2.1.97.

SCIENCE EDUCATION

Anand, Navneet. Breaking stereotypes. **Indian Express** 18.1.97.

Bhaduri, Sumit. Science policy must look to future. **The Times of India** 16.1.97.

COMBATING CHALLENGES (Editorial). **Deccan Chronicle** 6.1.97.

Gupta, Y P. The unethical streak in scientific community. **The Hindu** 28.1.97.

IMPURE SCIENCE (Editorial). **The Telegraph** 13.1.97.

Jayan, T V. A lot of hot air... **Deccan Herald** 19.1.97.

________ SOS — save our science **Deccan Herald** 7.1.97.

Khan, Iqbal H. 21st century calls for now science policy. **The Times of India** 8.1.97.

Mashelkar, Raghunath Anant. Profiting from science **Deccan Herald** 19.1.97.

Masood, Ehsan. Science made *interesting* **The Hindu** 21.1.97.

MORE FOR science (Editorial). **The Hindustan Times** 6.1.97.

Rajan, Y S. Let us then be up and doing... **Deccan Herald** 19.1.97.

Sandhu, *Kulvinder. Teaching science in schools.* **Free Press Journal** 20.1.97.

SCIENCE AND technology under the new regime (Editonal) **The Hindu** 25.1.97.

STATE OF science (Editorial). **Indian Express** 4.1.97

VOCATIONAL EDUCATION

Agarwal, Damodar. Business education. **The Statesman** 31.1.97.

Anand, Navneet. Alluring alternatives. **Indian Express** 11.1.97.

Bajaj, Sheela. Designing a specialised institute. **The Pioneer** 4.1.97.

Das, Ranjit Kr. Advertising, post reforms. **The Pioneer** 30.1.97.

Kumar, Neerja. Back to school. **The Economic Times** 10.1.97.

Malhotra, Jagdish R. Institutions condense MBA courses. **The Hindustan Times** 7.1.97.

Mitra, Pramit. Study here for a British MBA degree. **The Times of India** 15.1.97.

Nair, T N. Streetsmart management schools. **The Hindustan Times** 7.1.97.

Shrivastava, Girish. A living from social work. **The Pioneer** 8.1.97.

Wasan, Tarun. Software jobs on the rise. **The Times of India** 15.1.97.

DISTANCE EDUCATION

Bhatnagar, Gaurav Vivek. The other campus: Queues and more queues. **The Hindu** 20.1.97.

Nambath, Suresh. Surrogate campus. **The Hindu** 27.1.97.

TEACHERS & TEACHING

Amrik Singh. Ensuring accountability of teachers. **The Hindu** 27.1.97.

Arora, G L. Need to enhance teachers' competencies. **The Hindu** 28.1.97.

Awasthi, Jitender. Honing out teachers' skills. **The Tribune** 20.1.97.

Balasundaram, S N. A call for teacher accountability. **The Hindu** 7.1.97.

Bhandari, J K. Teachers like teaching. **The Tribune** 6.1.97.

Natarajan, S. Demands of the noble profession. **The Hindu** 7.1.97.

Prakash Rao, S. The teaching-learning process. **The Hindu** 21.1.97.

Sharma, D P N. Teaching: Service to humanity. **The Hindu** 28.1.97.

Sharma, Protim. Teaching English speaking in India. **The Assam Tribune** 11.1.97.

COUNSELLING & GUIDANCE

Dinesh Kumar. How to get a TV job? **The Tribune** 6.1.97.

------- How to prepare for group discussion. **The Tribune** 20.1.97

Varadan, M S S. Training opportunities for career building. **The Hindu** 18.1.97.

EDUCATIONAL RESEARCH

Saraswathi, S. Five decades of social science research: A perspective. **The Hindu** 14.1.97.

EDUCATIONAL TECHNOLOGY

Auddy, Ashis. CU (Calcutta University) - see me option. **The Telegraph** 13.1.97.

Babu, Hemant. Will we see a future shock? **The Pioneer** 20.1.97.

Jatema, H S. Welcome to the world of Internet. **The Tribune** 16.1.97.

Kothiyal, Himank. The medium is the message. **The Pioneer** 20.1.97.

Mahajan, Shubhit. Web of information. **The Pioneer** 14.1.97.

EDUCATIONAL EVALUATION

Deepa and Sri Rema. EAMCET: How leak-proof is the new proposal? **Deccan Chronicle** 29.1.97.

SSC QUESTION papers (Editorial). **Free Press Journal** 21.1.97.

Shukla, Saurabh. Examining the system. **Indian Express** 11.1.97.

Venkatachala Iyengar, K S. Reforms in examinations. **Deccan Herald** 12.1.97.

ECONOMICS OF EDUCATION

Amrik Singh. Soaring fees & faulty system. **Deccan Herald** 26.1.97.

Jhunjhunwala, Bharat. Make education an investment. **The Pioneer** 15.1.97.

Nambath, Suresh. Earn while you learn. **The Hindu** 6.1.97.

Sen Gupta, Nandini. Placements 97. **The Economic Times** 19.1.97.

LIBRARIES & BOOKS

Manigandam, I K. Maintaining personal libraries. **The Hindu** 14.1.97.

Misra, Deba Prasad. Book, book fair and society. **The Assam Tribune** 7.1.97.

Ranchan, Renee. Read me ! **The Hindustan Times** 15.1.97.

Saraswathi, S. "Publish or perish?" **The Hindu** 21.1.97.

SORRY STATE of libraries. (Editorial) **The Tribune** 4.1.97.

Varalakshmi, R S R. University library services. **The Hindu** 21.1.97.

Wheeler, Sara. Read riding hood. **The Telegraph** 17.1.97.

PHYSICAL EDUCATION & SPORTS

Santosh Reddy, K. Sports school with a promise. **Deccan Chronicle** 12.1.97.

WOMEN'S STUDIES

Bhagwati, Simanta. Emancipating them all. **The Assam Tribune** 18.1.97.

ELEMENTARY & SECONDARY EDUCATION

Joshua, Anita. Parents' nightmare : And more. **The Hindu** 6.1.97.

Pal, R M. Primary education : The odd subject. **Deccan Herald** 12.1.97.

COMPARATIVE EDUCATION & AREA STUDIES

Jaspal Singh. Education mess in Punjab. **The Tribune** 31.1.97.

INTERNATIONAL COOPERATION

Chopra, Mannika and Bhattacharjee, Swati. One step forward. **The Telegraph** 13.1.97.

INSTITUTIONAL PROFILE

Madhav, Vijay. House of parallel research : Institute for Social and Economic Change, Bangalore. **Deccan Herald** 24.1.97.

Maheshwari, Belu. Arts college in state of drift : Govt College of Art, Chandigarh. **The Tribune** 13.1.97.

Nigam, M L. The making of a university : Osmania University. **Deccan Chronicle** 26.1.97.

Sharma, Manoranjan. Tezpur University completes three years. **The Assam Tribune** 21.1.97.

Pandey, Deepak Kumar. DU (Delhi University) turns 75! **The Hindustan Times** 29.1.97.

BIOGRAPHICAL PROFILE

Bharali, Sailajananda. Carl Sagam : The special scientist. **The Assam Tribune** 12.1.97

Ramchandran, K. An innovative teacher: Dr S S Rajagopalan. **The Hindu** 27.1.97.

Sen, Sunanda. Bhabatosh Datta. **The Economic Times** 20.1.97

CLASSIFIED ADVERTISEMENTS

KUMAUN UNIVERSITY
NAINITAL

Applications are invited on plain paper for the following temporary posts in a D.S.T. financed Research Project entitled **"Phytochemical Investigations, of some Himalayan Bryophytes"**

1. **Research Scientist**

   M.Sc. Ph.D. in Botany with consistently good academic record and specialization in Bryology with research experience in (i) Bryophyte taxonomy. (ii) Field collections in Kumaun Himalaya. Rs.3000-4500+125% DA+ Rs.600 HRA+Rs.200 Hill Allowance.

2. **J.R.F. (Chemistry)**

   M.Sc. Organic Chemistry with good academic record. Rs.2500-2800+ Rs.400 HRA.

3. **Technical Assistant (Chemistry)**

   M.Sc. Organic Chemistry with experience of handling sophisticated instruments. Rs.1400-2600+Rs.250 HRA.

The applications be sent to Dr. Giri Bala Pant, Principal Investigator, Botany Dept. Kumaun University, D.S.B. Campus, Nainital.

The last date for receipt of applications is **31st March, 1997**.

Giri Bala Pant
PRINCIPAL INVESTIGATOR

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY,
THIRUVANANTHAPURAM-695 011

(An Institute of National Importance under Government of India with the status of University and unique feature of combining Biomedical Engineering and Technology with patient care services in advanced specialities).

Advt.No.P & A.II/4/SSC/SCTIMST/96

Dated 22.01.1997

Applications are invited from Indian Citizens for the undermentioned posts so as to reach the undersigned on or before **15.03.1997** on plain paper with bio-data, passport size photograph and xerox copies of certificates to prove age, qualification and experience.

1. **Associate Professor in Neurosurgery**: Upper age limit 45 years as on 28.02.1997. Scale of Pay Rs. 4100-125-4850-150-5300/-

   Qualification & Experience: Four years of teaching and/or research experience after M.Ch. in the speciality or its equivalent qualification in the case of 2-year course OR three years experience after M.Ch. in the case of 3-year course or nine years experience after MBBS with M.Ch. in the case of direct 5-year course.

2. **Assistant Professors In Neurology, Neurosurgery & Cardio-Vascular Thoracic Surgery**: Upper age limit 40 years as on 28.02.1997. Scale of Pay Rs.3500-125-4500/-

   Qualification & Experience : One year of teaching and/or research experience after DM/M.Ch, as the case may be, or its equivalent qualification in the speciality concerned in the case of 2-year course OR DM/M.Ch in the case of 3-year course OR 6 years after MBBS with DM/M.Ch in the case of direct 5-year course.

3. **Assistant Professors in Radiology, Anaesthesiology** : Upper age limit 40 years as on 20.02.1997. Scale of Pay Rs.3500-125-4500/-

   Qualification & Experience : Three years of teaching and/or research experience after obtaining the requisite *postgraduate qualification MD in the* speciality concerned

   In the case of Postdoctoral certificate holders of this Institute in Anaesthesia and Radiology, one year duration of the course will be considered as teaching/research experience.

   Note : Must have a medical qualification included in the Indian Medical Council Act 1956 and Registration with the Central/State Medical Registration Council for the above posts.

4. **Scientist-E (Biochemistry)**: Scale of Pay Rs.4100-125-4850-150-5300/-

   Qualification & Experience : A first class in M.Sc. (Biochemistry) with 12 years of R & D experience or Ph.D in Bio-chemistry with 8 years of R & D experience in the area of Thrombosis. **Job Description**: The Scientist is expected to lead programmes related to Blood-Material interaction, development of biological products for commercialisation.

5. **Scientist-C (Microbiology)**: Upper age limit 35 years as on 28.02.1997. Scale of Pay Rs. 3000-100-3500-125-4500/-

   Qualification & Experience : A first class in M.Sc Microbiology with 4 years of R & D experience or Ph.D in Microbiology area. **Job Description**: The Scientist is to monitor bioburden and implement sterility assurance in devices and implants, infection in animals and initiate programmes to develop related biomedical products.

5. **Scientist-C (Biotechnology)**: Upper age limit 35 years as on 28.02.1997. Scale of Pay Rs.3000-100-3500-125-4500/-

   Qualification & Experience : A first class M.Sc in Biotechnology with 4 years of R & D experience OR Ph.D in Biotechnology. **Job Description**: The Scientist is to initiate programmes on cell-material interaction and engineer cells for the development of biomedical products.

6. **Scientist-C (Biochemistry/Molecular Biology)**: Upper age limit 35 years as on 28.02.1997. Scale of Pay Rs.3000-100-3500-125-4500/-

   Qualification & Experience : A first class M.Sc in Biochemistry and/or Molecular Biology with 4 years of experience OR Ph.D in the speciality. **Job Description**: Has to interact between the Hospital and the BMT wing of the Institute in clinical, ultra structural *(electron microscopic) and histochemical* studies in epilepsy and other neurological disorders in particular.

General Conditions

All posts carry allowances at Central Government rates NPA at Central Government rate will be granted to medical personnel. The academic staff recruited will be eligible for addition of upto 5 years to the qualifying service for pension in accordance with the rules of the Institute.

Age, qualification and experience relaxable in exceptional cases.

Shortlisting of applications will be done on the basis of qualification and length of relevant experience and therefore all minimum qualified candidates may not be called for interview.

A panel valid for 1 year will be prepared and appointment will be made subject to availability of vacancy/requirement.

Persons working under Central/State Government or in a Public Sector Undertaking should submit their applications through proper channel.

Any attempt to influence the Selection Committee or the institute directly or indirectly will disqualify the candidate.

In all matters pertaining to this advertisement, the decision of the Institute shall be final and binding.

DIRECTOR

BIRLA INSTITUTE OF TECHNOLOGY

MESRA : RANCHI - 835215
(Deemed University)

ADMISSIONS NOTIFICATION 1997

The Entrance Examination for Admission to

(A) UNDER GRADUATE DEGREE COURSES :
- (1) **Bachelor of Architecture (5 Years) Course.**
- (2) **Bachelor of Engineering (4 Years) Course in Civil, Computer Science, Electrical and Electronics, Electronics and Communication, Mechanical, Production Engineering & Polymer Engineering.**
- (3) **Bachelor of Pharmaceutical Sciences (4 Years) Course.**

(B) POST GRADUATE DEGREE COURSES :
- i) **M.B.A. (Master of Business Administration)** 2 Yrs. Full-Time Course and 3 Yrs. Part-Time Course.
- ii) **M.C.A. (Master of Computer Application)** 3 Yrs. Full-Time Course and 4 1/2 Yrs. Part-Time Course.
- iii) **M.Sc. (Master of Information Science)** 2 Yrs. Full-Time Course.
- iv) **M.Sc. (Master of Bio-Medical Instrumentation)** 2 Yrs. Full-Time Course.

(C) POST GRADUATE DIPLOMA COURSE :
- (i) **D.C.A. (Diploma in Computer Applications)** 1 Yrs. Full-time Course 1 1/2 Yrs. Part-Time Course.

*Will be held on **May 24th and 25th 1997** at the following centres:*
Agra, Ahmedabad, Allahabad, Bangalore, Bareilly, Bhagalpur, Bhopal, Bhubaneswar, Bombay, Calcutta, Chandigarh, Dehradun, Delhi, Dhanbad, Guwahati, Ghaziabad, Gorakhpur, Hyderabad, Jaipur, Jamshedpur, Lucknow, Madras, Muzaffarpur, Nagpur, Patna, Ranchi, Trivandrum, Varanasi and Vijayawada provided sufficient number of candidates opt for the proposed centres.

ELIGIBILITY:

FOR UNDER GRADUATE COURSES
- (1) **Bachelor of Architecture** : I Sc./10+2 or equivalent with Physics, Chemistry and Mathematics.
- (2) **Bachelor of Engineering** : I.Sc./10+2 or equivalent with Physics, Chemistry and Mathematics.
- (3) **Bachelor of Pharmaceutical Science** : I Sc./10+2 or equivalent with Physics, Chemistry and Biology.

The students opting for 5 years Bachelor of Architecture course are required to appear in a Aptitude Test for Architecture in addition to papers in Mathematics, Physics and Chemistry.

Maximum age limit for admission in undergraduate course is 21 years as on 1.10.1997 relaxable by 5 years in case of SC/ST candidates

FOR POST GRADUATE COURSES
- (i) **M.B.A. Master of Business Administration)** : Full-Time Course 2 years and Part-Time Course 3 years. Graduate (10+2+3 system) *in any discipline with at least 50% aggregate marks at graduate level. For Part-Time students* in addition 3 years experience in a reputed firm after graduation is necessary.
- (ii) **M.C.A. (Master of Computer Applications)**: Full-Time Course 3 years and Part-Time Course 4 1/2 years. Graduate (10+2+3 system) with Mathematics/Statistics as one of the subjects obtaining atleast 50% aggregate marks at graduate level For Part-Time students in addition 3 years experience in a reputed firm after graduation is necessary
- (iii) **D.C.A. (Diploma in Computer Applications)** : Full-Time Course1 year and Part-Time Course 1 1/2 years. *Graduate (10+2+3 system) in any discipline with Mathematics/Statistics in 10+2 level with at least 50% aggregate* marks at graduate level For Part-Time students in addition one year experience in a reputed firm after graduation *is necessary*
- (iv) **M.Sc. (Master of Information Science)** . Full-Time Course of 2 years. Graduate (10+2+3 system) in any discipline with atleast 50% aggregate marks at graduate level.
- (v) **M.Sc. (Master of Bio-Medical Instrumentation)** : Two years programme with six months internship in hospital. B Sc (10+2+3 system) with at least 50% aggregate marks at graduate level with Mathematics/Biology as one of the subjects.

Those appearing at the various qualifying examination are also eligible The selected candidates will however, be *required to produce the qualifying examination result by the end of September.*

Application forms for the above programmes can be obtained by post on non-refundable pre-payment of Rs. 150/- (Rupees One Hundred fifty only) by crossed Indian Postal Order/Bank Demand Draft, Payable to **'BIRLA INSTITUTE OF TECHNOLOGY'**, Mesra, Ranchi. The request should accompany a self addressed envelope of size 26x12cm. affixed with postage stamps of Rs. 3/- (Rupees Three Only) clearly mentioning on the envelope the form required i.e. B. Architecture/B.Engineering/B Pharmaceutical Science/M.B.A/M.C.A./D.C.A./M.Sc. (Information Science)/ M.Sc. *(Bio-*Medical Instrumentation) as the case may be. The last date for obtaining the forms by post is 16th March 1997 and *from Institute cash counter is 31st March* 1997. *Application material will be sent by ordinary post under certificate of* posting and Institute will not be responsible for any postal delay/loss in transit.

The last date for receipt of complete application form is March 31st 1997.

There is provision of Direct Admission for Non Resident Indian Students whose parents are employed ABROAD and who pay the Educational Cost in U.S. Dollars.

Such N R.I. students must apply on the prescribed form obtainable from the Institute by sending non refundable Bank Draft of U.S. $ 50 in favour of Birla Institute of Technology, Ranchi, INDIA before 15th June, 1997 AND must have passed :-

(I) I.SC/10+2/ XII standard /'A' level or any other examination which is recognised by the Association of Indian *Universities equivalent there to with Physics, Chemistry and Mathematics/Biology with a minimum of 60% Marks in* aggregate for UNDER GRADUATE COURSES.

(II) Graduate (10+2+3 system) in any discipline or any other examination which is recognised by A.I.U. equivalent thereto as mentioned above for POST GRADUATE COURSES.

Note :- In case of any legal dispute concerning Entrance Test, 1997, the same will be subject to the jurisdiction of Ranchi Bench of the Patna High Court.

B.I.T., Mesra, Ranchi.
Date : 24th December 1996.

RHIZ/BIT/96-97

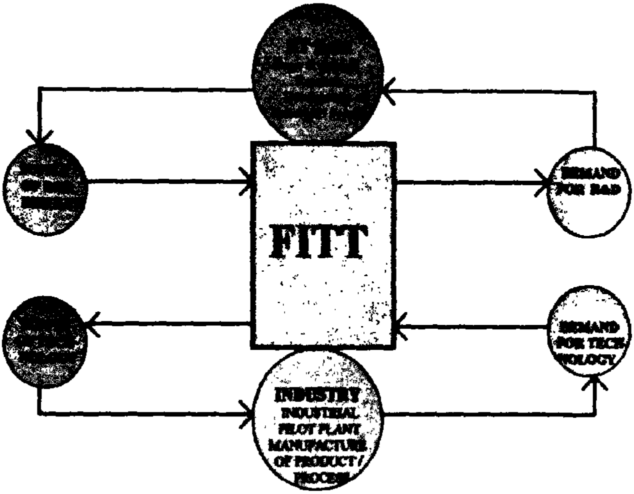
Co-ordinator Entrance Examination

UNIVERSITY NEWS, 35(7), FEBRUARY 17, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL–11106/97

Foundation for Innovation and Technology Transfer

Indian Institute of Technology, Delhi

An Industry-Institute Interface Organisation



Organisational Highlights....

- Set up by INDIAN INSTITUTE OF TECHNOLOGY, DELHI
- Scientific and Industrial Research Organisation (SIRO), recognised by **DSIR**
- Administratively and Financially Independent of the Parent Institute
- Self Sustaining, Commercial ethos driven and non-profit making
- **Primary resource** - IITD Faculty Expertise and Facilities
- **Secondary Resource** Other Academic and Professional Organisations and Experts
- Single window service to Industry

Range of Activities ....

- Transfer of Technology relating to proven R & D outputs
- Research Partnership with Industry for Technology development and its commercial application
- Innovative Problem Solving Consultancy with Industry Clients
- HRD and training, through short courses and technology update programmes
- Information Support Services to industry and R&D Organisations
- National Centre for Indian CD-ROM Databases set up by NISSAT, DSIR
- Providing access to the array of specialised equipment and central facilities such as Video Programme Making, Laboratories, Central Workshops etc

Contact Address :
Dr. A.K. Sengupta
Managing Director
Foundation for Innovation and Technology Transfer (FITT)
Indian Institute of Technology (IIT)
Hauz Khas, New Delhi - 110 016
Telephones : 6857762, 666979, (Extn. 7064, 7085 ,7067)
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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 8 FEBRUARY 24, 1997 Rs 9.00

Panjab University
— A Profile

G.C. Pal

Restructuring Science Education
— New Challenges for Teachers

Bimal Kanti Sen & Mashkuri Yaacob

The Never Ending Gap

J.N. Kapur

Some Random Thoughts on Mathematics Education and Research

Ramlal Parikh

Gandhian Approach to the Environment

A.P.J. Abdul Kalam

Technology for National Development
— Convocation Address

Association of Indian Universities

But for the patronage of the Punjab Government and the Govt. of India (particularly the Ministries of Rehabilitation and Education) and the liberal grants made by them and the University Grants Commission, the University would not have been able to rehabilitate itself and develop to its present dimensions.

Teaching Departments & Programmes

In its fiftieth year the Panjab University has today more than fifty Teaching Departments and Centres on the Campus at Chandigarh functioning under eleven Faculties and over 100 affiliated colleges. Prominent among the teaching departments/ Centres, Schools and Institutes which have contributed to its magnificient growth include :

Ancient Indian History, Culture & Archaeology, Economics, Gandhian Studies, Geography, Guru Nanak Sikh Studies, History, Library & Information Science, Mass Communication, Philosophy, Political Science, Psychology, Public Administration, Sociology, University Business School, Fine Arts, Indian Theatre, Music, Physical Education, Education, Chemical Engineering & Technology, Central Asian Studies (Chinese and Tibetan Languages), Dayanand Chair for Vedic Studies, Guru Ravi Dass Chair of Sant Sahitya Studies, English, French, German, Hindi, School of Panjabi Studies (encompassing Panjabi Literature, Bhai Vir Singh Chair, Sheikh Baba Farid Chair and Panjabi Lexicography), Russian, Sanskrit, South Indian Languages, Urdu and Persian, Vishveshvaranand Vishwa Bandhu Institute of Sanskrit and Indological Studies, Hoshiarpur, Department of Laws, University Institute of Pharmaceutical Sciences, Anthropology, Biochemistry, Biophysics, Botany, Chemistry, Geology, Mathematics, Microbiology, Physics, Statistics, Zoology, Biotechnology, Centre for Computer Science and Applications, Central Instrumentation Laboratory/University Science Instrumentation Centre (recently upgraded by the UGC to Level-III with a provision of additional funds, Regional Sophisticated Instrumentation Centre, Department of Evening Studies and Department of Correspondence Studies.

The eminence that this University enjoys stems from the excellence and its high standard of research and teaching. The departments of Mathematics, Geology, Chemistry and Physics enjoy the status of Centres of Advanced Studies. The University Institute of Pharmaceutical Sciences, University Business School and the departments of Zoology, Statistics, Geography, Education, Anthropology and Sociology have been selected under the Special Assistance programme (SAP) of the University Grants Commission. The departments of Physics, Chemistry, Geology, Mathematics Pharmacy (University Institute of Pharmaceutical Sciences) and Zoology have got recognition and financial assistance both from the UGC and the Department of Science and Technology, Govt of India, under the Infrastructure Development Programme (COSIST).

In addition to this, several departments like University Institute of Pharmaceutical Sciences, University Business School, Political Science, Gandhian Studies and Sociology have got special research grants for the development of new thrust areas in the subject. Other centres established on the campus include Energy Research Centre, Population Research Centre, Regional Resource Centre, Centre for Adult and Continuing Education & Extension and Centre for Women's Studies and Development.

The Academic Staff College established in 1987, organises Orientation and Refresher Courses for college and university teachers. Besides being the schooling centre under the aegis of the UGC, the University has also conducted AICTE-sponsored teacher Induction Programmes for university and college teachers in Pharmacy, Engineering and Management. The North-Western Regional Centre of the Indian Council of Social Science Research is a hub of academic activities. The DST is sponsoring Supercomputing and Visualization to enhance communication network facilities and also to make possible super computing requiring high-end computation specially for scientific purposes. Vocational courses in Biotechnology, Computer Applications, etc at the first degree level have also been introduced at the Campus during this session forming part of the syllabi of B.Sc. (Hons. School).

In recent years, the University has also introduced Master's Programmes in Biotechnology, Computer Applications, Defence & Strategic Studies, International Business, Finance & Control and M.Tech. in Instrumentation.

In pursuit of quality teaching and research in Biotechnology & Instrumentation, the University signed memoranda of understanding with the Institute of Microbial Technology and the Central Scientific Instruments Organisation. The Central Instrumentation Laboratory, University Science Instrumentation Centre and Regional Sophisticated Instrumentation Centre are doing remarkable job by catering to the needs of the scientific community in the region.

A Coaching Centre for training of SC/ST and other categories of students for the Indian Administrative Services has been set up in the University.

Our students continue to do well in various fields and the fact is substantiated by the UPSC examination analysis. A large number of students of this University are I.A.S. Officers, eminent Professors in India and abroad, and are holding envious positions in public and private places.

Continuing Education & Extension

Extension being the third dimension of education, this University is among the few in the country which has translated into action the priority in the new National Policy on Education to adult education by introducing programmes of adult education for illiteracy eradication in many affiliated colleges besides providing incentives to students for participation in adult illiteracy eradication programme.

Faculty Achievements

The faculty has more than twenty Fellows of the Indian National Science Academy; Nehru Fellows, UGC National Fellows, National Lecturers; winners of prestigious medals like S. Ramanujam Medal, S.L. Hora Medal, S N. Singh Medal, L. Rama Rao Medal; Bhatnagar Awardees, Arjuna Awardees; and , Members of Sahitya and Lalit Kala Akademies. Others have been Presidents of their professional bodies at home and abroad. Many have won Young Scientists Awards, Career Awards and Hari Om Trust Prizes.

Architectural & Engineering Activities

The Panjab University is one of the few Indian universities, which possess its own architectural and engineering cell. Designed initially by Pierre Jeanneret, under the guidance of Le Corbusier, the campus of the University has been scientifically planned and aesthetically laid out. It has been divided into zones — the teaching area being in the north. The massive University Secretariat is not only the nerve-centre of the campus, but also of a large number of affiliated colleges. There are six hostels for men and four for women students. The A.C. Joshi Library, the Gandhi Bhawan, the Student Centre, the Prof. P.N. Mehra Botanical Garden, the Fine Arts Museum, the Open-Air Theatre, the University Auditorium, the Bhai Ghanayia Ji Health Centre, the Swimming Pool, sprawling play grounds, the Nehru Gymnasium and Sports Complex, the Guest House Complex of the ICSSR Regional Centre, the Staff Club, the Faculty House, the Post Office, the State Bank of India, the Shopping Centre, Schools for children — all these make it a self-sustained township.

Library

The Library of the University is the *piece de resistance* of its academic life. It is housed in a magnificent multi-storeyed building which is air-conditioned. It has about 5.87 lakh volumes, including a fine collection of reference books. The Library receives about 800 current periodicals covering almost all disciplines and has a good collection of back volumes of journals. In-house Reprographic and E-Mail facilities are available. In its pursuit of modernisation plan with focus on computerisation, collection development and infrastructure strengthening like the NICNET system, the Panjab University Library is linked to the global super highway — the Internet. In addition, there are departmental libraries and a library cell, main library, maintained by ICSSR for use of social scientists.

Health Care

The University Health Centre caters to the medical needs of the students, staff and their families free of cost. There are five full time doctors in addition to consultants and specialists and sufficient paramedical staff.

Student Welfare

The establishment of the Department of Student Welfare at this University has been a pioneering step in the field of organising and coordinating various student services/activities ensuring thereby the maintenance of proper academic atmosphere on the campus. There is a provision for award of Cultural scholarships and for grant of financial aid to the needy students. The welfare of foreign students on the campus is looked after by the Dean of Foreign Students and in each college in Chandigarh by their own adviser. The Department of Alumni Relations keeps in touch with the alumni and endeavours to foster links among the alumni themselves.

The University Information and Advisory Bureau, under the charge of the Dean of University Instruction, disseminates information to students for higher studies abroad. An Employment Information & Guidance Bureau of the Government of

India, provides information and guidance to the students about employment avenues, in the choice of courses and careers keeping in view their aptitude.

Sports Activities

The University has produced many outstanding sportsmen and sports women of national and international fame. The Maulana Abul Kalam Azad Trophy instituted by the Ministry of Education in 1956 to be awarded annually to the University winning the largest number of inter-university tournaments and contributing the largest number of players for the national and international competitions, has been won by the Panjab University eleven times.

The Department of Youth Welfare of the University has been coordinating student activities of the University teaching departments and its affiliated colleges with a view to channelising fruitfully their latent potentialities into creative and constructive directions.

Publishing House & Public Relations

The University also maintains a publishing house of its own, known as the Publication Bureau, serving the world of scholarship and the student community by producing selected learned works and textbooks for students. There is also a University Press, which caters to the printing needs of different offices and departments. The Department of Public Relations & News Magazine looks after the publicity of various activities and functions. 'The PU News', is a house journal, which aims to project the corporate image of the University departments and colleges.

Affiliated Institutions

Besides numerous teaching departments on the campus, the University has under its umbrella, 104 affiliated colleges. Out of this number, the University imparts instruction in 83 colleges in Arts, Science, Commerce & Humanities and there are 21 professional colleges imparting education in Engineering, Medical, Ayurvedic System of Medicine, Dental Surgery, Nursing, Architecture and Home Science. The number of students appearing in University Annual examination is around 1,40,000, examinations for whom are conducted in over 280 examination centres spread over Punjab, Chandigarh, Haryana & Delhi. A large number of students appearing in the university examinations are from the Department of Correspondence Studies which imparts instruction through correspondence.

Fifteen affiliated colleges selected by the UGC under the Scheme of Vocationalisation of Education, are imparting instruction in several vocational subjects i.e., Advertising; Sales Promotion & Sales Management; Biotechnology; Computer Applications; Electrical Equipment & Maintenance; Functional English, Functional Hindi; Industrial Fish & Fisheries; Office Management & Secretarial Practice; Seed Technology; Tax Procedures & Practices.

Future Plans

The future vision of the University, in view of certain vital trends emerging in the academic scene in the on-going socio-economic transformation in the country, is to provide for more facilities including easy access to knowledge, to the students and the faculty. Keeping this in view the University has earmarked sites for the construction of (i) a Boys' Hostel to be named as Dr. B.R. Ambedkar Hall, (ii) a Working Women's Hostel for 100 working women with a Day Care Centre for 25 children, (iii) a 'Alumni House', besides a proposal to set up another School named 'Dr. P.N. Chhuttani School of Tropical Medicine' on the University Campus. In order to augment the modernisation programme, the A.C. Joshi Library of the University is ready with its computer network and shortly will start automating its functions and services. The collection building and infrastructure development programmes are nearing completion. To extend this computerisation programme further, it has been decided to computerise, in the first instance, most of the examination results of the University in a phased manner. Keeping in line with the modern concept of vocationalisation of education, several vocational and job-oriented courses have been introduced at the University campus and at its affiliated colleges.

Other Contributions

The distinguished alumni and faculty members of the Panjab University have made formidable contributions towards achieving excellence in education during the last five decades of this University. Pioneering works in the formulation of science policy, education and even the very establishment of National Laboratories, the Council of Scientific and Industrial Research; the Atomic Energy Commission; Fine Arts, Lalit Kala and Science Academies in the country were possible on account of the vision and hard work of S.S. Bhatnagar, Atma Ram, D.N. Wadia, G.C. Chatterjee, Mulk Raj Anand, A.C. Joshi, Hazari Prasad Dwivedi and a host of other eminent people associated with the Panjab University.

Continuing with its old excellent traditions, the present campus at Chandigarh has contributed immensely to the multifaceted growth of education and nation-building. During the 50 years of existence of this University these lineages have extended to various disciplines. We think of the Nobel laureates like Hargobind Khurana and Abdus Salam and eminent and distinguished scientists like Birbal Sahni, Dewan Anand Kumar, M.R. Sahni, Vishwanath, P.N. Mehra, George Mathai, Hansraj Gupta, P.N. Chhuttani and others. We have to reckon with the contributions made by the galaxy of these stalwarts who stand in the first rank of Indians. One is reminded of the existence of Lal Chand *Library of Vedic Knowledge and the establishment of an institution of Sanskrit and Indology at Hoshiarpur which is in the great tradition of our* culture and bears the mark of its founder, Acharya Vishwa Bandhu. It is a well-known institute of Vedic studies and Sanskrit lexicography under the aegis of the Panjab University. The University has nurtured the spirit of excellence in almost all fields of human resource development and is legitimately proud of the achievements of its alumni and faculty.

Besides the scholars, scientists, and educationists, the University has produced excellent administrators, managers, policy planners, sport persons, adventurists and others who have given shape to our destiny and paved the way for the overall development of our country. Dissemination of knowledge, instilling the aspirations for excellent education, research and growth of human values have been the hallmarks of this University which has carved out a special niche in our country and is proud of its cogenetic heritage with our independence.

The dedicated service rendered by the successive Vice-Chancellors, members of the Senates, Syndicates and other bodies of the University and also the active support of the public in general and educationists of this part of the country and the teachers and administrators working in the University in *particular have helped the University develop on* sound educational lines and contribute significantly to national development.

The University today epitomizes the confluence of academic endeavour, administrative effectiveness and systematic development. Over a period of time, it has not only survived and enlarged, it has emerged as a mighty seat of higher learning and research in the country.

INDIAN INSTITUTE OF SCIENCE AND MANAGEMENT

Recognised by All India Council for Technical Education
Ministry of Human Resource Development, Govt of India, New Delhi.

INSTITUTIONAL AREA, PUNDAG, RANCHI-834 004

ADMISSION NOTICE

Applications are invited for admission to the

1 **Three Year Diploma in Hotel Management, Catering Technology and Applied Nutrition** Eligibility. 10+2 or its Equivalent. Appearing candidates can also apply

2 **Two Year Post Graduate Diploma in Business Management** (Equivalent to MBA Degree) Eligibility: Bachelor's Degree in any discipline Appearing candidates can also apply

3 ***One Year Post Graduate Diploma in Computer Applications***

(Recognition of PGDCA course is awaited)

Eligibility 10+2+3 *in any stream with minimum 50% marks in* **aggregate** with Mathematics/Statistics as one of the subjects at Intermediate/10+2 level

HOW TO APPLY:

1 All candidates should obtain an application form and prospectus from the IISM office on payment of Rs. 300/- in cash or can be requested by post by sending Bank Draft for Rs 325/- in favour of Indian Institute of Science and Management. Ranchi by *mentioning the name of course.*

2. For Business Management course the candidate should also obtain the Bulletin and MAT application Form from the All India Management Association, Management House. 14, Institutional Area, Lodi Road, New Delhi-110003 on payment of Rs. 325/- by Demand Draft in favour of AIMA-CME payable at New Delhi by Post or Rs. 300/- in cash at the counter of AIMA, New Delhi.

3. The MAT application Form can also be procured from IISM, Ranchi by Demand Draft of Rs. 325/- in favour of AIMA-CME payable at New Delhi

4 *The applicant will have to appear in All India Written Test* Examination The details of Test are available in the Bulletin.

5 The *last Date for submission of completed* Application Form is **4th April, 1997.**

Restructuring Science Education

New Challenges for Teachers

G. C. Pal*

In the science based technological society of today, it is imperative to educate citizens about basic science, newer developments and their consequences in present and future contexts. There is a common agenda of 'science for all' in the recent curricular reforms undertaken by both the developed and developing countries, with emphasis on scientific and technological literacy. This is a great departure from the curricular reforms in the context of making science more academic with the primary goal of preparing students for tertiary education in science subjects. Science is to be made accessible to all children with a view to developing better scientific and technological literacy. As Prof. A. Rahman, former Director, NISTADS, said the concept literacy in India is traditional. A majority of people do not read, write and understand science. In the context of literacy, the important issue is that all programmes of development have scientific content, which should be explained to the people. Inadequacy or non-availability of scientific information to the concerned sections of people has been the common factor of non-performance. In the context of science education, the National Policy on Education states that "science education programme will be designed to enable the learners to acquire problem solving and decision making skills and to discover the relationships with health, agriculture, industry and other aspects of daily life. Every effort will be made to extend science education to the vast numbers who have remained outside the pale of formal education".

How is it perceived?

Science education is generally understood as what is formally taught in the name of science at schools and colleges. For others, it deals with science teacher training or teaching-learning processes in science. Broadly, it helps in developing understanding of the nature and methods of science and engaging in problem solving and scientific inquiry. In that sense scientists are also science educationists. But it is a fact that science education has become a specific domain, with a specific research community and a specific corpus of knowledge (*Gil-Perez*, 1996). It is not a basic area of study but is rather a multipurpose emerging area with multidisciplinary character. Like other fields its aims are not supposed to be directed towards formal schooling and training only but also to those not studying science. Not all students in science classes end up being scientists, but surely, they all have a right to a good science education. There is also scientific and technological illiteracy among students and among science and technology educators as a consequence of the high degree of specialization provided in the educational system, where science for the scientists has been seen as the goal of science and technology education (*Banerjee*, 1994). The main task is how to educate people about science, so that they can use the knowledge in personal life? What are the methods that could be used and what are the factors that influence in this effort? A scientist once takes extra responsibility in this line, he could be a best educationist in science to serve the interests of society. Those teaching science are vested with added responsibilities as they influence the future scientists. But why scientists cannot play the role of upbringing the future scientists? Of course, the situation cannot improve unless the scientists are given freedom to write on science and express their opinion. Then how a group of eminent scientists despite their commitment have been performing both as scientists and science educationists? Perhaps a personal initiative! which others lack. This has left extra responsibilities with teachers. Teachers are expected to impart textbook knowledge as well as popularise science among students so that students can take science to their doors. Formal organizational structures dedicated to popularising science education are not strong enough to take away the burden of teachers. Much therefore, is expected of teachers which may not be fulfilled in school taking other constraints into consideration. The challenge before decision makers is how to structure science education system so that the people in a technical society could be scientifically literate to use science in day to day life. A change in approach to science content and teaching is imperative.

Problems in Science Education

The concern for reforming science education is

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affected by the major factors of the necessity of including technology with science for meaningful learning; constructing meaning for learner; a real-world context for learning; re-emphasising science as human curiosity; and selecting basic concepts and processes (*Banerjee*, 1994). In formal science education, three major aspects, therefore, need a closer look — curriculum, teaching and system of evaluation. It remains a fact that science curricula and syllabi demand to be larger and larger day by day as science developments in scientific fields take place at a rapid pace. The temptation to update curricula has led to more additions without deletions (*Sehgal*, 1993). Despite calls from every corner for new framework in devising revised curricula, the emphasis still continues to be on theory, concepts and memorizing a lot of factual information. Understanding basic principles, methodology for and approach to problem solving and practical applications of scientific knowledge to real life situations find little place. The science information presented in schools appears to have little impact on the daily lives of students. Application of concepts to students or/and society in general are omitted. It is assumed that impact and application will occur naturally. Most of the information included in science courses is justified because its acquisition is considered necessary before the student enrols in the next science course.

Even if a well devised curriculum is there, it does not guarantee effective teaching. Science teaching, like much of teaching in other subjects, does not endear students to science, does not arouse interest, encourage curiosity or relate to things real or practical. This is partly due to the fact that teachers neither during their student days nor during their training get to learn or know of any other way of teaching science (*Sehgal*, 1993). Almost all science teachers use textbook all the time. The text is used as source not only of ideas and instructions but also for questions asked by the teacher as well as questions to be used in examinations. Teachers view text as basic information which students must learn, hence restrict students' interests to a rigid course outline. Their teaching usually does not include any exploration, practice with formulating new explanations in a creative manner. Even hands-on activities are generally set up to put students through a series of technical manipulations. Evaluation is also based on mastering text vocabulary and recalling information from textbooks and lectures. There is hardly an opportunity to assess whether or not students comprehend and can apply the knowledge they seem to have gained. Science is restricted to what occurs in the classroom. It is rare for science classes to utilize any resources beyond the textbook, teacher and science room.

Constructing Knowledge

In recent years, there has been a shift in paradigm from positivism to constructivism in science education because of knowledge exploration through technological development. Students come to classroom with plenty of knowledge and construct their knowledge in the classroom accordingly. Sometimes their scientific knowledge gets misdirected. In order that students should construct accurate scientific knowledge they are to be given opportunity to deal with materials to explore the conditions. Teacher has to base his/her classroom on constructivism, which could be the best component of the curricular reform movement in science education. Constructivists assert that all learning is an active process of constructing meaning. The active construction of meaning is facilitated when teachers create an environment that forces students to be physically and mentally prepared (*Clough and Clark*, 1994). Resnick (1983) summarizes the characteristics of this new approach in three statements — (i) learners construct understanding, they do not simply mirror what they are told or what they read, to understand something is to know relationships; (ii) bits of isolated information are forgotten or become inaccessible to memory; and (iii) all learning depends upon prior learning. Whether students do it correctly or not, the way they do and explain would show students' prior ideas. When the errors provide knowledge of students' thinking, teacher is benefited for his professional development. On the other hand, students' correct ideas will feedback for teachers' professional satisfaction. Once the teachers understand that they have not only to teach but also learn as how far students have learned from teaching, this attitude helps teachers to construct their knowledge of students.

Teacher can construct students' knowledge through creative input. Once students do something correctly, the teacher can fortify the exercise through a brainstorming technique. Now he can change some variables to raise some predictive questions. Students may fumble, but never stop to answer and explain the phenomenon. They will construct explanation based on their prior knowledge. Teacher will get right opportunity to check the misconceptions. Teacher can repeat the activities with variations on some concept till he gets convinced that students have learnt basic principles. Ward et al (1996) rightly say that "simply presenting the 'correct' answer robs students of the opportunity to construct meaning and make connections between observations and concepts". Students' misconceptions are not changed or even identified by answering questions for them. Teachers must solicit student input and use processing questions to reveal students' thinking (*Dantonio*, 1990). Teacher-student interactions and peer interactions dictate the direction pursued in developing the concept.

The discrepancy between students and teachers, students and students in their explanations challenge each one to go for additional activities. Students go on exploring the observation and relationships found in each other's activities. The teacher can guide students to construct the real concept. He then can provide opportunities for students to apply the concept to the new situations. As Gil-Perez (1996) states science learning is a conceptual change in three basic concepts — (i) an elicitation phase of pupil's ideas, making them conscious of the plausibility and productivity of those ideas; (ii) a restructuring phase, creating cognitive conflict, generating pupils' dissatisfaction with their current ideas and preparing them for the introduction of scientific conceptions; and (iii) an application phase, giving opportunities for using the new conceptions in different contexts and consolidating them. Providing a classroom environment that encourages collaboration among students and between teachers and students is an important component of a constructivist classroom environment. When teachers consistently use questions that probe, clarify and explore the relationships between students' prior experiences and new classroom experiences, students develop more accurate science concept. The teaching strategy remains the organization of learning as a treatment of problematic situations that pupil can identify as worth thinking about. Students in this classroom environment change from passive receptors to active learners responsible for their own construction of meaning. Sehgal (1993) emphatically claims that—

> "a simple factor which can make a world of difference to and transform science education... is the increased and mandatory use of the most unused and yet most versatile equipment available with all schools and colleges in the country: the head and the two hands available with every student and teacher. The present system is largely based on hearing and watching... Students are rarely called upon to use their hands to do something practical on their own and even less frequently required to engage their heads to do their own thinking. This has to change and one way of helping it along would be to arrange science education in such a way that learning is only by doing and doing is necessarily by the students themselves either on their own or with help and guidance from the teacher".

Simpson (1963) while viewing essential ingredients of science suggests that exploration and explanation domains of science are to be incorporated into the fabric of the curriculum and the teaching strategies, but the testing should be generated by the learner rather than prescribed textbooks. The challenge for science teachers is how to help students effectively construct meaning.

STS Approach

With rapid developments in science and technology, the key questions remain as to how to develop mechanisms for effective application of science and technology for national development and how to create a favourable technology climate. In science education, the primary goal has been to help learners develop a substantiative understanding of the nature of science. There have been calls more recently for social relevance in science teaching. The slogan 'environmental education' by all educationists means that teaching science should not just make the students aware of these environmental concerns, but should give them the necessary skills so that they will be able to do something when they leave the school/college. The students should be taught how they can be benefited by science after they leave school/college, how real human needs can be satisfied by the scientific knowledge they are being exposed to. This has led, in recent years to the development of Science-Technology-Society (STS) curriculum. STS is the teaching and learning of the science in the context of human experience, including the technological application of science. Science teaching via STS strategy begins with a societal context and includes a consideration of technology. With the introduction of STS within the science curriculum, helping students to develop an understanding of the nature of S & T and their interaction in society has become a complementary goal of science instruction.

STS is viewed as the teaching and learning of science in the context of human experience. It represents an appropriate science education for all learners. Central to the STS approach is a focus upon individual learners. Students are often involved in determining and developing directions for the study. The STS approach necessitates problem identification by individual students. Such problem identification intrinsically includes a multidisciplinary view (*Yager & Lutz*, 1995). There are few problems that are related only to science and likewise few problems only to one science discipline. For most problems exist in a total context. The STS approach using social issues as organizers for science provides several advantages over the textbook-oriented organization such as providing a ready vehicle for utilizing the more complete definition of science, a rationale for the search for information, etc. It resolves the major problems of science education such as excessive use of textbook, less justification of information by use, less relevance to daily lives, teacher's self-style role, simple recall of information in evaluation. The potential of STS is that it can help educators reconstruct the science programme and the students play central role in planning and carrying out the investigation. But science teachers may find the consideration of technology to be a problem since most of their formal preparation was devoid of any work in technology. Science teachers are usually prepared in the pure sciences. They find it difficult to start with society and move to technology. Their own experiences in science dictate both their views of science and method of teaching science. In this respect, teachers' inservice training becomes much more important. Because STS expects proficiencies on the part of teachers not only in different disciplines of natural sciences but also in social sciences. One cannot expect such a broad base of knowledge among teachers. It is therefore, necessary that attempts be made to enhance teachers' knowledge base through teacher training courses and through appropriate reading materials. As Agarkar (1996) claims teachers are not at all well prepared for STS curriculum. The teachers should be made aware of all potential visual aids around them through which any principles of science can be easily demonstrated. How standard questions often be modified fairly to relate to the local environment? How every lesson could be shown by solving the problems relating to real situation? How science apparatus could be substituted under the correct circumstances by the items used in day to day life? As Raju (1994) states "no teacher can honestly claim that he cannot do class experiments or demonstrations because there is not enough equipment". Once a large stock of low cost experiments and examples have been compiled and demonstrated in teacher training programme, the teacher can not only use them in class, sometimes modifying them slightly, if needed, but also will get oriented to think of new examples keeping local availability in mind.

An Integrated Approach

One aspect of great importance for the advancement of science is the manner in which different disciplines come together for mutual support and more importantly give birth to wholly new fields and disciplines. There has been another reform effort emphasizing integration of teaching of individual academic disciplines. The ways that science curricula might be restructured to help students better understand the interaction and interdependence of organisms and events in the world. Understanding is to be based on the interrelationship of biological, chemical and physical principles to analyze the organisms and events. It is assumed that science integration if presented in meaningful contexts and coupled with appropriate pedagogical support will allow students a better understanding of the world and help them learn effective problem solving skills. It will show the ways scientific principles interact to govern the operation of organism and events, and allow students to build useful conceptual understanding. This approach has to be well illustrated through case studies. Of course, restructuring in this line requires a great deal of time and efforts and there will be likelihood of less resources being available to support this effort, a start could be made with teacher training programmes. In order to have students understand concepts in any discipline, teachers have to know how to incorporate aspects of other disciplines.

Besides, the unity and interdisciplinarity among the natural sciences there is increasingly closer interaction between the basic and applied sciences, especially in engineering, agricultural and medical sciences. These interactions have led to a number of applications of scientific discoveries in products and processes in use in various sectors of society.

After the New Education Policy (1986), although attempt has been made to integrate different disciplines of science, in the school curricula, there is however, one area of interdisciplinarity that has remained relatively weak, that is, between the natural sciences and social sciences. The effective study of disciplines like geography, anthropology, sociology and psychology undoubtedly requires an overlap between natural and social sciences. With the increased permeation of science into society, it is of enormous importance that the interdisciplinarity that has been so productive in the natural sciences, should also grow more profoundly between the natural and social sciences. Science must be managed to meet societal needs and expectations. Science by itself may not offer solutions to the majority of socio-economic problems, unless it takes into account political, economic and social considerations. Science and technology, therefore, must build bridges with society and tend towards greater interdisciplinarity. To understand better the modern demands and challenges, we should look at the complex interconnections between modern science and society and the economy. Kumar (1995) rightly calls for the integration of scientific disciplines with arts, humanities and languages to be able to develop more responsible future generations. There is need to restructure the science and technology education along more pragmatic lines. Giving a human face is indispensable to cultivate a proper appreciation of science. It is important that science sheds off its austere and aloof exterior, takes up humanistic concerns, adopts developmental perspectives of humanities and integrates its styles of discourse with those of arts and literature.

Conclusion

The development of science education system has been a major policy concern since Independence. But it is yet to reach at everybody's door. An examination of science education in terms of subject content and methods for the science based skills tells a poor story. The future demand for S & T manpower is going to be for knowledge based skilled work force. There is need for a major modernisation programme for science education. At the same time, innovative approach in teaching to tackle local problems is another requirement to be met. This needs an adding of socio-cultural dimension to science education to change the public perceptions of scientific ideas and to inculcate scientific temper. In this context, activist organizations can play a vital role through advocacy and information as well as carrying out innovations at the school level. The support system from governmental agencies and decision making bodies should be made more flexible and transparent. Alternatively, setting up Centres of Excellence in Science Education (*Goel*, 1997) as autonomous bodies with the objectives of making science education more attractive, popular and effective would intensify the efforts in an organizational manner. While the advancement of the boundaries of science should be the objective of scientists, they have the social responsibility and moral obligation to ensure that scientific knowledge is put to best use to serve man and society. They can create public awareness of science and help remove public apathy to it. Those teaching science are vested with added responsibilities. In addition to imparting accurate and precise scientific information, they must also instil in the students social implications of science. Life enhancing potential of science and technology cannot be achieved unless public in general achieves a basic understanding of science and makes conscious efforts in the acquisition of scientific habits of mind. In today's technology driven society, every effort has to be made to extend science education to the vast numbers. Structuring of science education in this direction should address the subject content, science based skills, creative teaching strategies, social use of science and no less important is the organizational structure to take science to the people.

References

1. Agarkar, S.C. (1996). *Effective implementation of STS curricula: An Indian experience*. Paper presented at Focus 1996 (International Technology/Vocational Education Conference) held in Moscow, Russia, Aug 2-14, 1996.
2. Banerjee A.K. (1994). Reforms in science education in the context of education for all. *Journal of Indian Education*, March, 36-42.
3. Clough M.P. & Clark, R.L. (1994). Constructivism *The Science Teacher*, Oct., 47-49.
4. Dantonio, M. (1990). *How can we create thinkers Questioning strategies that work*, Bloomington, Ind.: National Education Service.
5. Gil-Perez, D. (1996). New trends in science education *International Journal of Science Teaching*, 18 (8), 889-901
6. Goel M. (1997). Information system for reassessing science education in colleges. *University News*, 35 (2), 8-11 & 14.
7. Kumar, A. (1995). Science curriculum : Need for a human face. *Chemical Business*, Feb., 67.
8. *National Policy on Education* (1986). Ministry of *Human Resource Development, Government of India*, New Delhi.
9. Rahman A. Scientific literacy in a democracy. *Current literature on Science of Science*, 20 (1), 1991, 19-20.
10. Raju, K.N. (1994). How practical science teaching can be? *University News*, July 18, 9-10.
11. Resnick, L.B. (1983). Mathematics and science learning : A new conception. *Science*. 220, 477-78.
12. Sehgal, N.K. (1993). Science education and scientific Temper. *School Science*, June, 50-55.
13. Simpson, G.G. (1963). Biology, the nature of science. *Science*, 139 (3550), 81-88.
14. Ward, K. et al. (1996). Constructing scientific knowledge. *The Science Teacher*, Dec., 21-23.
15. Yager, R.E. & Lutz, M.V. (1995). STS to enhance total curriculum. *School Science and Mathematics*, 95 (1), 28-35.

The Never Ending Gap

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Introduction

Scientific studies have been continuing since time immemorial. However, the Greeks formalized scientific investigation even before the birth of Christ. Almost all areas of science such as mathematics especially geometry, astronomy, physics, chemistry, biology and medicine attracted their attention. Scientific methodology, logic etc found a solid footing. The Greece, however, did not pay much attention towards the application of scientific knowledge obtained through painstaking research. After the fall of Greek to the Romans, the basic studies in science received a mortal blow in Greece, which however continued in Alexandria for a few centuries more. It was the Romans who devoted themselves towards the applied aspect of science and their genius blossomed to its fullest extent basing both civil and military engineering.

The Dark Age which continued in Europe from the end of the 5th century AD to almost 14th century AD spacing a period of about a millennium almost halted the progress of science in that part of the globe. However, science progressed in other parts of the world especially in India, the Arab world, and China. On the onset of the Renaissance in Europe at the fag end of the 14th century, scientific investigation again found its way in Europe and by the end of the seventeenth century it could lay a solid foundation to forge ahead. Science has been continuously progressing ever since gathering more and more momentum.

Growth of Scientific Literature

The scientific periodical is the most important vehicle of the communication in science. Observing the growth rate of scientific periodicals we can have some idea about the growth of science. *Journal des Savans*, the first scientific periodical of the world started in January 1665 from France. *Philosophical Transaction of the Royal Society* started shortly after in May 1665 from London[1].

Table 1 : Growth of Scientific Periodicals

Year	*Number*	*Remarks*
1665	2	
1800	100	
1850	1,000	
1900	10,000	
1925/27	25,000	Current & Ceased Titles
1934	36,000	Current & Ceased Titles
1953	50,000	Current & Ceased Titles
1963	60,000	Current & Ceased Titles
1963	35,000 ±10%	Current Titles
1973	50,000	Current Titles

From Table 1 it is clear that till 19th century the growth of science was but slow[1-3]. It started picking up speed in the 19th century and in the 20th century its growth rate has become unbelievably high. It has taken one complete century i.e. 1800 to 1900 for the appearance of 10,000 periodicals, and the same number appeared just in ten years between 1953 and 1963! This gives us the clear indication that earlier what scientists used to do in century, now they are doing the same just in a decade, if not earlier! This will be amply clear from the growth of chemical literature in the present century (Table 2).

Table 2 : Growth of Chemical Literature in the Twentieth Century.

Year	*Number of abstracts and citations*
1907	11,847
1915	18,981
1920	19,326
1930	55,146
1940	53,680
1950	59,098
1960	134,255
1970	309,742
1975	454,245

Chemical Abstracts was started by the American Chemical Society in the year 1907. The service has

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been continuing till date without any interruption. As far as chemical literature is concerned this is considered to be the most comprehensive abstracting service in the world.

From Table 2 we can see that in the first decades of the present century in about 8 years time the increment was about 7,000 articles, the same increment in literature now takes place in less than a year (vide the figure of 1960 and 1970)[4,5]. That means, in the first decades of the century what chemical scientists did in ten years, now they are doing the same just in about one year. From Table 3 we can see that the phenomenon of very fast growth is not limited to chemistry alone, it is taking place in other fields as well. The literature in various fields has registered a growth of two to four times just in one decade spanning between 1957 and 1967.

Table 3 : Growth of Literature in Various Subjects

Abstracting Services	*1957*	*1967*	*1970*
Applied Mechanics Review	4,245	8,802	10,030
Biological Abstracts	40,061	125,026	230,025
Chemical Abstracts	101,027	239,481	309,742
Electrical & Electronics Abstracts	6,451	24,034	39,927
Engineering Index Monthly	26,300	56,560	66,000
Metals Abstracts	8,219	23,800	24,255

The data given in the foregoing three tables are backdated by about two decades or more. A genuine question may be asked whether the same trend is continuing till today. Let us examine this point taking some current data. From Table 3 we see that the *Engineering Index* abstracted 66,000 articles in 1970. The number has gone up to 95,482 in 1980 and 120,337 in 1988, indicating the fact that the growth continues. By checking the INSPEC database[7] we get the same result as given in Table 4.

Table 4 : Growth of Physics Literature

Year *Subject*	*1989*	*1994*	*5-Year Growth Rate (%)*
Physics	6,350	9,348	47.2
Mechanics	3,193	3,280	2.7
Acoustics	4,863	5,771	18.7
Optics	5,663	7,451	31.6
Heat	8,661	8,797	1.6
Electricity etc	12,602	15,144	20.7
Magnetism	2,637	1,646	-37.6
Nuclear science etc.	12,518	12,967	3.6
Total	56,487	64,404	11.4

It is to be noted that the INSPEC database was searched with the search term electric$, and nuclear$ for the topics Electricity and related areas, and Nuclear science and related areas respectively. The rest of the topics were searched with the same terms as given in Table 4. It can be seen from Table 4 that there is a positive growth rate in the case of all topics except Magnetism. By taking all the subjects together also we find the positive growth rate. In some cases the growth rate is very high, for example, Optics and Physics. The trend of growth of literature which we saw two decades ago continues till today. The growth rate in almost all cases is found to be exponential and the doubling time of literature is found to be less than 10 years in many cases. It is to be remembered that the literature in the field of nuclear science and technology is highly confidential. Whatever comes out in the open literature is but the tip of the iceberg, wherefrom the growth rate cannot be properly judged.

Backdatedness of Courses

Development of infrastructure

At the backdrop of the huge growth rate of scientific literature we can look at the growth rate of the universities. Here we have taken the case of Great Britain alone as the world scenario of the growth of the universities is not readily available. The establishment of the universities in Great Britain dates to 13th century and it is one of the few countries of the world which has maintained the tradition of high standard of education centuries after centuries. Comparing Table 1 with Table 5 we see that the number of periodicals has increased 30,000 times in three centuries starting from 1965 whereas the number of universities in Great Britain has gone up only by 7 times during the same period[8]. If the world figure of the universities is known, the situation is unlikely to be greatly different. It cannot be expected that the growth of universities or even colleges will be at par with the periodicals. It is just to show that the growth in the two areas is highly uneven and not comparable. The growth in the case of scientific periodicals is exponential, whereas in the case of teaching institutions sometimes the growth may not be linear even. The growth in scientific periodicals and the figure provided in Tables 2-4 clearly reflect the exponential growth of scientific knowledge. Now the question arises how are the universities coping with this awesome growth in science? Are they keeping pace with the knowledge or continuously falling behind? There

Table 5 : Growth of Universities in Great Britain

Universities Established	*No. of Universities*	*Cumulative Total*
Till 17th Century	6	6
18th century	0	6
19th century	4	10
1901-10	4	14
1911-20	0	14
1921-30	1	15
1931-40	0	15
1941-50	1	16
1951-60	4	20
1961-70	22	42
1971-80	0	42
1981-90	1	43
1991-96	*41	84
Total	84	

*36 institutions were accorded university status in 1992

are indications that the universities are continuously falling behind

If we analyse logically we shall find that the universities have possibly got no other option but to fall behind. If a professor enthusiastically moots the idea to add a specialisation relating to his own in the university, the process the university will have to undergo comprising preparation of the plan, scouting for fund, development of infrastructures like classroom, laboratory, equipment, materials, books and periodicals and the time the whole process will require depending on the specialisation, the availability of funds, and bureaucratic procedures may range from two to five years or even more. From the day the idea is conceived to the day of its implementation, the knowledge has advanced far ahead. The well-intentioned professor, quite updated at the time of conceiving the idea will find himself totally backdated when he enters the classroom to deliver the first lecture of the specialisation.

Backdatedness of Teachers

A teacher joining the university in their twenties as a lecturer gradually starts rising to become reader or associate professor, professor, and so on. While rising in many cases they fail to keep pace with the advancement of knowledge and remain not far ahead of the place from the point of view of their knowledge wherefrom they started as a lecturer. This is very true in the case of developing countries where the teachers in many cases do not have access to the latest literature appearing in research periodicals and their updating of knowledge depends only on the latest textbooks which the library purchases. Unfortunately by the time new knowledge enters the textbook, it is in most cases already older by five years or even more. To prove this point one may look at the references given in the textbooks. Let us take the case of a noted textbook on a narrow discipline of computer science. The fact that the 4th edition of the book has come out in 1992 just within four years of the publication of the 3rd edition provides enough indication of its popularity in the world. How uptodate is the content of the book? We shall try to find this out by analysing the references

Table 6 : Yearwise Distribution of References

Year	*No. of References*	*Cumulative Total*	*Cumulative Percentage*
1992	0	0	00
1991	4	4	3.15
1990	5	9	7.09
1989	6	15	11.81
1988	3	18	14.17
1987	5	23	18.11
1986	14	37	29.13
1985	3	40	31.50
1984	4	44	34.65
1983	4	48	37.80
1982	16	64	50.39
1981	22	86	67.72
1980	7	93	73.23
1979	4	97	76.38
1978	8	105	82.68
1977	3	108	85.04
1976	6	114	89.76
1975	8	122	96.06
Earlier	5	127	100.00
Total	127		

It can be seen from the Table 5 that only 18 (14.17%) references out of 127 belong to the last five years. The largest number of references totaling 38(29.92%) belong to the years 1982 and 1981, already 10 years old. Moreover, many of the references in textbooks belong not to research articles but to books which by and large contain backdated material. Therefore, updating of knowledge by relying on textbooks alone is not possible as contents of all textbooks will not be equally updated. Another fact with textbooks is that their revised editions do not appear every year. Normally, it takes four to five years or even much more. A textbook published in 1992 will continue to be a textbook till the next edition comes out. Suppose the next edition comes out in 1977, then the information which the teacher will impart will be in most cases 10 to 15 years old. Of course, in certain subjects, the change is rather slow, where an old textbook may serve the purpose. But, the areas where the rate of development is very high and touching the industrial application, there an old textbook can wreak havoc.

The best way to keep oneself posted with the latest knowledge in a field is to read primary literature appearing in primary periodicals, conference documents, and so on. Unfortunately, access to all major primary periodicals in a field is but a distant dream for many of the lecturers simply because they may not be available in the library of the university they are working in. It has been observed that many libraries in the developing countries cannot place orders for most demanded periodicals for years simply because of lack of funds, and the nearest library where the scientists can find at least some of the periodicals of the fields of their interest may be hundreds of miles away.

With the advent of Internet, multimedia technology, CD ROM etc thousands of academic databases containing indexes, abstracts, and in some cases full-text, have become accessible from any part of the world practically within a very short time. However, accessing most of these databases cost such an amount which most teachers may not be able to afford and the department might not be in a position to bear the cost. Moreover, locating a particular piece of information navigating through Internet at times is too frustrating especially for those who are not well-versed with the technique. The variegated searching procedures of different search engines, indexing of items without any standard vocabulary, etc pose formidable barriers between the searcher and the information. In many developing countries, Internet is just making its debut, hence exploitation of this new but gigantic source of information is still beyond the reach of many.

Granted that a l turer on a topic, say Optics has all the top ranking periodicals in his library and he reads very regularly two articles a day. Table 4 indicates that in the year 1994 as many as 7,451 articles on optics were abstracted in INSPEC database. If the lecturer intends to read all these abstracts he will take more than 10 years, by which time about one million articles will be ready for him to read! This clearly indicates that a university lecturer in science will not be able to keep himself updated in a macrodiscipline like optics. He can at best keep himself updated in such microdisciplines as fibre optics and laser, that too, not for long. Unfortunately, he will have to teach mostly macrodisciplines basing textbooks and covering the subject with broad strokes of brush.

In such a situation we cannot expect these teachers to update the course very much because they themselves are not updated. A teacher who is actively in research activities, and/or acting as a consultant to industrial firms are definitely in a better position to update the courses.

Inertia of Teachers

Another factor responsible for the backdatedness of the university courses is the inertia of a section of teachers. They do not want to update themselves following the principle of least effort. It has been observed in many developing countries that computer science course has not been incorporated till date in the library and information science programmes simply because the existing teachers manning the department were not trained in computer science. Most of them were not even interested to learn the subject, nor they were allowing their colleagues to learn the same thinking that their positions will be at stake in case their juniors learn the subject and start teaching.

University-Industry Liaison

Apart from the traditional products, the industrial enterprises will always try to go for the latest products that will result in many cases through the exploitation of a patent. Any firm putting a completely new product into the market will have definite edge over other competitors. Any industrial enterprise will relentlessly try for this. For exploiting the patent the industry will require men skilled in the art. A fresh engineering graduate from a university will not at all be equipped to undertake the

(*Contd. on page 18*)

Some Random Thoughts on Mathematics Education and Research

J.N. Kapur *

1. Be proud of being a teacher and specially of being a teacher of an exciting, basic and extremely useful subject like mathematics.

2. Be excited about every result in mathematics. Be excited that every result in algebra is true for all values of the unknowns, that every theorem in geometry is true for an infinity of figures of a specific kind and that you can solve problems with mathematics in minutes which you may not be able to solve without mathematics even in millions of years and so on.

3. Love your students and consider it a privilege to have responsibility to make them life-long learners, but first be life-long learners yourselves.

4. The greatest asset of a teacher is the life-long love and respect of his students. Earn as much of this love as you can by loving and caring for all the students you may teach. A teacher's worth should be measured by the intensity of love and affection on the part of his students and not so much by his examination results.

5. Keep the company of great and dedicated mathematicians. Have some of these as your role models.

6. Keep the company of great books. Read regularly expository articles on Culture, History, Excitement, Education and Relevance (CHEER) of Mathematics, such as the 400 articles given in *Fascinating World of Mathematical Sciences* (FWMS) and on the 100 fascinating books about the fascinating subject of mathematics as described in FWMS2 etc. Even if you read one article per day, you will have enough inspiring material in these books for 3 or 4 years.

7. Develop problem-solving and problem-posing skills. Enjoy solving non-routine challenging problems.[3-10] For every problem solved in these books pose at least 3 new problems of the same type of your own.

8. Read current expository articles published in journals like the UGC journal on Mathematics Education, Bulletin-Mathematical Association of India, Notices of the American Mathematical Society, Mathematical Intelligencer, American Mathematical Monthly, Mathematics Magazine etc.

9. Read at least one new research paper every month in your field of specialization. Make a good collection of reprints and photocopies of papers in your field. Visit one good library as often as possible to collect photocopies of good expository and research papers.

10. Always aim high in research, always try to publish in good refereed journals. Publish to create an impact and to get the esteem of other research workers in your field. Discuss your ideas with as many active research workers as you can by meeting them personally and by correspondence. The aim of mathematical research is to find deep mathematical truths. It is not just publishing any sort of papers.

11. Try to understand the motivation of every paper you read and try to extend it and generalise it.

12. Not only extend other's results, but also do creative original research work of your own. Hopefully others will try to develop your work and thus your ideas would spread.

13. Follow the techniques of research methodology as given in *Research Methodology for Scientists and Engineers*.

14. Do not teach any course more than 3 or 4 times. Introduce new courses, prepare for new courses and teach them.

15. The ideal teaching situation arises when you offer new courses, not yet prescribed in your

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university, but for which you can create enough motivation among your students so that they are prepared to learn these topics without getting any academic credit for it and you are prepared to teach these courses without getting any financial reward for it. The ideal situation arises when students want to learn because they are excited about learning and teachers are excited about teaching these new courses since they want to teach in order to learn and grow.

16. Be completely familiar with the use of computer software programmes to help in better teaching of mathematics. Try to be familiar with the use of Mathematical or Mathematica Laboratory, or Maple Algebra programmes for learning and teaching of mathematics. Whenever computer facilities are available, use these facilities of software programmes in learning. At least use scientific calculators in helping students to discover mathematical theorems themselves.[12]

17. Read widely about the role of computers and calculators in mathematics education and research. Read about the controversy concerning '*death of a proof*'.[13] Read about the great new applications of mathematics in biological, social, management and computer sciences.[14-15] Read and observe the process of mathematics.[16]

18. Follow the highest ethical, moral and scientific values in pursuing research in mathematics. Be perfectly fair in appointments and selections and give credit to everybody for the original work he does.[17]

19. Start a mathematics club/mathematical society in your school or college or department.[18] Let students prepare projects, read books and speak in these clubs. Invite good expository mathematicians, scientists and engineers to come and interact with students. Interact yourself with scientists, engineers, business managers, executives for finding mathematical models and problems in each area to enrich your teaching and to derive new concepts for mathematisation. Encourage all users and user departments to use as much mathematics as possible in their teaching.

20. Take special care of students from weaker sections of society and of first generation learners. They form more than half of the human resources of our country and many of them have significant mathematical and scientific talents. Develop special programmes for both weak and gifted students.

21. Form a mathematics laboratory equipped with 40 scientific calculators for school students.[12] Form a similar computational laboratory well equipped with 10 PCs in your college. If necessary get money for these from businessmen, industrialists and from philanthropists for this work.

22. Encourage your students to participate in Regional Mathematical Olympiads. Organise local olympiads in every town and district. Make olympiads a mass movement. Organise also training programmes for the successful candidates in local olympiads to prepare for regional and national olympiads.

23. Organise the showing of mathematical dramas.[19-21]

24. Draw inspiration from lives of mathematicians of ancient and modern India and from the mathematicians of all countries of the world of all times.[22-23]

25. Take interest in history of mathematics specially in the history of those topics which you teach. Give historical anecdotes.[24-28]

26. Motivate every topic you teach by suitable problems from within or outside mathematics. Create first the need for mathematics and then teach the mathematics for which the need has been created in the minds of all the students

27. Research can be done at all levels, even at the level of primary and middle school levels, since research is investigation of new results which one does not know earlier. In this sense students should learn mathematics by discovering as much of it as possible. Mathematics learnt in this way can never be forgotten.

28. Teach and practice process of mathematics and the nature of mathematical thinking.[16] In research, we do experiments with numbers and geometrical shapes, discover patterns and make conjectures, search for examples and

counter examples to see whether the conjectures are always true and then try to prove the conjectures, in case no counter examples are available. In teaching however, we emphasize the last stage of giving proofs only. The earlier stages of the experimentation, recognition of patterns, searching examples and counter examples etc are not considered at all. These constitute the really exciting part of mathematics. We should teach as much mathematics as possible in the research way.

29. Mathematics is as much an experimental science as physics, chemistry and biology. We have both experimental mathematics and theoretical mathematics in the same way in which we have experimental physics and theoretical physics. In experimental mathematics we use calculators and computers, charts and models Mathematics Laboratories have to be an essential part of the mathematics curriculum

30 Mathematics is for understanding and not just for manipulation of symbols. Even when we manipulate symbols, we must think of the concepts underlying these symbols

31. Quite a good deal of what we teach at school and a significant part of what we teach in undergraduate programmes can be done by calculators and computers more effectively and more reliably than by human beings. Now we have calculators and computers which can not only add, subtract, multiply and divide, but which can differentiate and integrate symbolically. We have been spending a great deal of time in drilling our students in these operations and punishing them if they cannot do these correctly and in this process, we have been creating a great deal of fear of mathematics. It is now being argued that we should give this work to machines and use the time saved to do real-life problem solving, to get a deeper insight into mathematics, to teach mathematical modelling, to interpret the results given by computers and so on, if we continue to do what machines can do, time for mathematics in the curriculum will be cut down, but if we do creative real-life problem solving and interpretation of results and if we produce creative and thinking individuals, then our time will be increased.

32. Due to availability of computers and calculators, we have for the first time in history the possibility of teaching mathematics in the discovery way and of encouraging original thinking. In the 21st century, there will be no need of mediocre mathematicians because machines will do better work than mediocre mathematicians. However, there will be increasing demand for active, original, thinking mathematicians to solve complex problems of science, technology and society. Let us now plan to produce mathematicians going to be needed in the 21st century rather than going on producing mathematicians suitable to the needs of 18th and 19th centuries.

33. Similarly the future is for brave, creative, daring researchers and there will be no scope for researchers who do only graduate level exercises or who believe in changing full stops and commas to produce publishable papers. The future is for those who can solve real-life problems in science and technology and who can create first-rate abstract mathematics.

34. There is a large number of myths about mathematics education and research which are doing tremendous harm to mathematics. I have discussed 100 of these elsewhere.[29] Discuss them and explode them and make mathematics education a healthier system.

35. Our students and researchers sometimes, consciously or unconsciously give fallacious arguments. I have given elsewhere 21 commandments on the Biblical Analogy to help students and researchers in avoiding these pitfalls.[30] Warn your students of these pitfalls so that they always do correct and rigorous mathematics.

36. Mathematics is a great intellectual heritage of mankind. Cherish it and develop it. Have the goal of excellence in mathematics education and research. Not only love mathematics yourself, but see that all your students and members of the public also love this great subject and like to cultivate mathematics as a life-long hobby.[31]

References

1. *Fascinating World of Mathematical Sciences* (FWMS) Vols I-XVII, Mathematical Sciences Trust Society (MSTS).

2. *FWMS* Vol. 12. pp. 32-37.
3. *Mathematical Olympiads Problem Books* 1-6, MSTS.
4. *International Mathematical Olympiads* 1-2, MSTS.
5. *USA Mathematical Olympiads*, MSTS.
6. *NYSML-ARML Contest Solution Papers* MSTS.
7. *1000 Mathematical Challenges*, MSTS.
8. *International Tournament of the Towns* , Australian Mathematical Trust.
9. *Crux Mathematicorum*, Canadian Mathematical Society,
10. *Samasya*, journal.
11. *Research Methodology for Scientists and Engineers*, New Age publishers.
12. *Suggested Experiments for a Mathematics Laboratory*, MSTS.
13. *Death of a proof* in FWMS Vol. XVII, Pp. 26-36.
14. FWMS Vol. 2, 3.
15. *Insight Into Mathematical Modelling*, MSTS.
16. *Nature of Mathematical Thinking*, MSTS
17. *Ethical Values for Excellence in Education and Science*, New Age Publishers.
18. *Suggested Activities for a Mathematics Club*, MSTS.
19. *Tower of Brahma*, MSTS.
20. *Ramanujam's Miracles*, MSTS.
21. From to Mathematics Education.
22. *Eminent Indian Mathematicians of the 20th century* Vol. 1-5, MSTS.
23. E.T. Bell, *Men of Mathematics*, Penguins.
24. *Aryabhatta*, New Age Publishers.
25. *Topics for Mathematics Clubs*, MSTS.
26. *Ganit and Ganitagya* Vol. 1-2, MSTS.
27. *Historical Topics for the Mathematics Classroom*, NCTM.
28. *Ganit Kaumudi*, MSTS.
29. *Myths about Mathematics Education and Research*, FWMS Vol. X, 21-3 Vol. XI, 134-143, XII, 164-182.
30. *21 Commandments in Mathematics* in FWMS Vol. 17, Pp 48-60.
31. *Mathematics as a life long hobby*, FWMS Vol. XVII Pp 34-40.

The Never Ending Gap

(Contd. from page 14)

job. He will need special training. Even now, industries turning out traditional products in many cases put the freshers on apprenticeship training for one or two years before they can be entrusted with the specific responsibility. Let us forget about the newest product, and take the example of a newer product like optical fibre, even this product is decades old now. An enterprise venturing to manufacture this product for the first time in his country may face the same problem of finding the man skilled in the art. The fresh chemical engineering, electrical engineering or textile engineering graduate in all probability will not be the person he is looking for. Even if he takes such a person he may not be able to deliver the goods without further training. On the other hand a university may not be equipped at all to impart the necessary training. A university might not know the present or the future requirements of the industries in terms of specialized manpower. On the other hand the industrial enterprises might not know the strength, weaknesses as well as the capabilities of the universities. What is needed is the close liaison between the two. Once this is established the universities will know the future requirements of the industries and accordingly they will be able to plan and equip the university for organising short- as well as long-term courses to fulfil the need of the industries.

References

1. Subramanyam K. Scientific literature. *Encyclopedia of library and information science* 1979, vol 27, p.405, 407 [For the figures of 1665, 1880, 1850 and 1900]
2. Chen, Ching-Chi. Scientific and technical libraries *Encyclopedia of library and information science* 1979, vol 27, p. 14 [For the figures of 1925/27, 1934, 1953, and 1963]
3. Gupta B.M., Nathan S.S. Scientific and technical journals in the developing countries *ILA Bulletin* 1979, 15, 11-19 [For the figure of 1973].
4. Baker, D.B. Chemical Abstracts Service. *Encyclopedia of library and information science* 1970, v. 4, p. 482.
5. Figures for 1970 and 1975 have been drawn from the Chemical abstracts of the respective years.
6. Katz D.L., Tucker S.A Engineering literature. *Encyclopedia of library and information science* 1972 v. 8, p. 96.
7. *INSPEC database* 1989, 1994.
8. *World of learning* 1995. 45th ed. London, Europa, 1994. p. 1586-1649.

Gandhian Approach to the Environment

Ramlal Parikh*

For the last two decades, global concern for protecting environment is increasing. This is mainly focused on use of fast depleting natural resources and the consequent preservation of the ecological balance on the earth. Continuing damage to bio-diversiy wealth of the earth is now very serious. Several plant and animal species have already or are on the verge of disappearance.

Forest wealth is diminishing so fast that within next 15 years, the quantum of forest and related natural resources will reach a level much below the minimum needed for sustaining human life. It will alter the rainfall and local climate for a country like India. It may well aggravate the climatic problems throughout the world. Rivers in some cases are almost over-loaded with chemicals. Vast areas are contaminated with metals. Drinking water supply is shrinking due to our inability to purify even water for drinking.

Gandhiji was a person of great foresight. He was always ahead of his time. He had foreseen the above situation and had worked vigorously for a life style that was predominantly based on total harmony with nature in all its forms. His approach was preventive and not curative. The way of life that he developed in his *Ashrams* was fully conducive to nature in all its forms. Environment will be protected from the roots and will not be allowed to be degraded first and then cured. His approach to all problems of human life was integrated and non-segmentive. He never approached any problem in a fragmented manner. He linked all human problems to his holistic philosophy of integrated life. He did not consider environment as a separate problem not related to daily life or external to grassroot living. His *Ashrams* are effective models of life conducive to clean and creative environment. His programmes of community cleanliness, tree-worship, cow-breeding, promotion of cow-milk, vegetarianism, conservation of water, open-air prayers, natural farming with use of cow-dung and human excreta as fertiliser, avoidance of wastage of food, etc are all wedded to conservation of a good level of environment that is conducive to higher quality of life. Following words illustrate his passion for nature friendly life :

> "Without vegetation our planet would not be to support life even for a moment. In such a country especially, therefore, in which there is a scarcity of trees, tree-worship assumes a profound economic significance".

His holistic emphasis towards "All that Lives" is reflected in following words:

> "Future measurements will take note, not only of the human family, but of all that lives"

Still further his following words express his deep concerns for all forms of life including animal or insect-life :

> "So shall we realise in the fullness of time, that our domination over the lower order of creation is not for their slaughter, but for their benefit equally with ours. For I am as certain that they are endowed with a soul as that I am".

He clearly mentioned several times this that his struggle for *Ahimsa* (Non-violence) was not only towards animate beings, but was equally towards inanimate objects. He thus obviously refers to preservation of trees and related plant life as the source of conservation of environment.

Sustainable development requires a pattern of resource use that satisfies current needs without compromising the future. The guiding principles of sustainability traverse ecological, economic, social and cultural aspects of human life which have to be reconciled with each other.

Sustainable development needs to be a process of putting the people first so that we are able to make best use of limited resources available to us for securing the basic human needs. This process has to be environmental friendly. Our local communities in India had a rich tradition of living in harmony with nature rather than conquest of nature.

The industrialised rich nations of the North are full of disparity among themselves as well as within themselves. The disparities are assuming greater proportions and are denying fruits of development

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[Based on a paper presented at the symposium on Gandhi and the Environment organised by World Wildlife Fund-India on 5th October, 1996 at Delhi.]

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to under-privileged sections of the society, particularly, in the Third World of the South. A model of integrated development that does not compromise the ability of the future generations to live happily is needed, both in North World as well as South World.

In response to the need for meeting the twin objectives of a higher quality of life for human beings and preservation of natural resources base, it should be widely accepted that we are morally related to the physical world also. A sustainable world order must lead to a peaceful and non-violent society with equity as its foundation. Foremost of all, it should be a people-centred one. Mahatma Gandhi vigorously pleaded an integrated development where greed and acquisitiveness are well contained. Gandhiji spelt out this through his model of self-reliant village communities living in full harmony with nature.

Gandhiji stoutly pleaded that many of the problems of rural India such as poverty, illiteracy, unemployment, exploitation, marginalisation of villages have been created by centralised industrialisation inevitably leading to violence to human-life as well as natural life for its survival. He was very emphatic that a non-violent society cannot emerge from a factory civilization. Gandhian sociology would encompass under its fabric polity, economy and society. Gandhian perception of a new society indicates new hope for humanity. For this, we need to reconcile ecology, economics and ethics in an integrated manner. Keeping our needs at the minimum, is a key towards new society.

Gandhiji had warned as back as 1929 when he stated that to serve our villages is to establish Swaraj, everything else is but an idle dream. He further emphasised in 1936 that if the villages perished, India would perish too.

In 1942, he further elaborated this idea by stating that his idea of village *Swaraj* was that it was a complete republic independent of its neighbours for its own vital wants and yet inter-dependent for many others in which dependence was necessary.

The word 'Rural' in 'Rural Development' is not a spatial qualification or adjective to the word 'Development', but is the very foundation of sustainable development of the Indian society based on self-reliant rural communities.

In order to formulate and implement actions which lead to compatible balance between human activities and the ability of natural systems, to support and nurture life, it is imperative to prepare detailed profiles of the different eco-systems. Preparation of eco-system profile at the micro level is extremely necessary. Micro-studies on sustainable development rarely get out of the realm of macro platitudes.

Broadly such micro-studies may have the following objectives :

(a) Geographical survey of environmental resources pertaining to food and housing, such as tree-crops, agricultural crops, root-crops and building materials (in relation to topography, geography, geology, climate, economic condition and cultural requirements).

(b) Study of living resources by species of vegetation and wild life in relation to food and housing.

(c) Study of pattern of resource use in :

- (i) Production sectors like agriculture, forestry, animal husbandry; and
- (ii) Consumption sectors like food and housing

(d) Study of social and anthropological traits, customs, habits, traditions, local skills, etc to establish the use of resources in a sustainable way.

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Technology for National Development

Dr. A.P.J. Abdul Kalam, Scientific Adviser to Defence Minister and Secretary, Department of Defence R & D, Ministry of Defence, delivered the convocation address at the 46th Annual Convocation of the Smt. Nathibai Damodar Thackersey Women's University, Mumbai. He said "Technology is the main driver not only for the defence capability but also for economic strength and national development. The need of the hour is technological excellence and self-reliance. Technology that transforms itself as a weapon, can also be harnessed for generating national wealth. So let us arm India with technology". Excerpts

Life Time Mission

Educated and enlightened women have shaped all nations over all periods of time. Who can forget the crucial role played by women in our freedom struggle? They participated in a big way in all freedom struggle programmes launched by Mahatma Gandhi, sometimes even holding the young babies in their arms and facing brutal lathi-charge by the police. I would like to recall the scientific contributions made by a Scientist-- Madame Marie Curie, who made the discovery of radioactivity and also discovered two new elements, radium and polonium, and was awarded the prestigious Nobel Prize twice, a rare distinction indeed. Madame Marie Curie had commenced her intensive research at France, for a unique radio active element, based on her earlier experiments. The Curie couple requested the Government of Bohemia to donate them 10 tonnes of pitchblende free of cost. The Government accepted their request. For months together both Madame Marie Curie and her husband Pierre Curie did a lot of hardwork and continued research work against all odds and extracted few grams of radio active element from tonnes of pitchblende. On the night of November 1898, the important discovery of radio active material "Radium" was first time known to the world.

In that context, during her research work, Madame Marie Curie had once said, "Life is not easy for any of us. But what of that? We must have perseverance and above all confidence in ourselves. We must believe that we are gifted for something, and that this thing, at whatever cost, must be attained". That 'something' was to throw science upon a path hitherto unsuspected — and that is Radium. She also, in latter years, not only used Radium as source of X-Ray to diagnose injured during World War-I but also removed the pain and sufferings of the injured with the women's touch by using mobile clinic built out of her own earnings. The pain reliever, Madame Curie, alas was not spared by radium during the research period on radio activity using ores of this material. She sacrificed her pain by removing the sufferings of many. For our young members of the society, Madame Curie's life will set the purpose and meaning of life in any field that will enrich the country. Let us look at our Indian scene.

India's Integrated Technological Strength

Let us study the technological development of India, from 1960s upto next three decades and analyse and also look at where we will be heading beyond year 2000. India had green revolution in 1960s, followed by Operation Flood, and a series of launches—of our own ROHINI satellite in the low earth orbit using our rocket system, and recently, Indian Remote Sensing Satellite, was put into sun synchronous orbit, Indian Communication Satellites INSAT are in geosynchronous orbit, and of course AGNI did its mission. In Super Computer India has become self-sufficient and already Super Computers of 1.8 Gega flops is being produced. By 2000, India will have its own launch vehicle to place its own INSAT satellite in a Geo-stationary Orbit, a super computer of 20 Gega Flops, nuclear power generation of 3500 MW, digital exchange having 20 million lines. Of course our dream of a technologically strong India will be marked by launching of Hyperplane with the capability of putting 15 ton payload in low earth orbit. This Hyperplane would be capable of having 100 take-offs and landings. With the above focus, we saw in India, emergence of integrated technological strength. Harnessed properly, this strength will surely lead to a self-supporting and prosperous Indian society.

Integrated technological strength, is built with talented manpower and infrastructure for industrial growth together with natural resources and our traditional value system. What does it mean in the global context? Indi-

(Contd. on page 24)

MAJOR ECONOMIC

Growth Rate of Merchandise Imports (per cent per annum)

	1994 Imports (f.o.b. in $ million)	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	51,580	12.0	−14.0	9.1	6.8	23.6	22.7	19.5	18.0
Bangladesh	4,368	−1.2	−5.7	9.1	9.0	19.4	14.8	28.0	21.1
Bhutan	87	−19.0	−14.4	2.1	49.8	−21.6	16.4	...	...
India	31,269	14.4	−24.5	10.3	3.2	30.4	26.7	21.0	18.0
Maldives	195	8.9	17.0	18.4	5.9	9.7	17.0	...	...
Nepal	1,159	17.3	13.5	−0.6	14.2	35.0	15.0	12.8	16.0
Pakistan	10,429	9.9	6.8	11.9	−3.7	12.0	17.2	17.8	18.7
Sri Lanka	4,073	13.2	20.7	7.4	17.0	15.4	18.6	13.0	14.0

Balance of Trade ($ million)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	−14,743	−7,818	−9,633	−6,338	−10,396	−14,803	−19,270	−24,783
Bangladesh	−1,587	−1,386	−1,256	−1,113	−1,433	−2,009	−2,736	−3,531
Bhutan	−20	−3	−11	−45	−21	−31	...	...
India	−9,437	−2,798	−4,368	−1,285	−4,506	−7,221	−9,726	−12,618
Maldives	−63	−83	−117	−139	−120	−154	...	...
Nepal	−449	−482	−376	−462	−790	−1,001	−1,188	−1,405
Pakistan	−2,714	−2,261	−2,790	−2,552	−2,655	−3,408	−4,437	−5,795
Sri Lanka	−473	−805	−715	−742	−871	−979	−1,183	−1,434

Balance of Payments on Current Account ($ million)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	−12,333	−3,428	−5,884	−3,602	−5,924	−8,905	−10,714	−12,996
Bangladesh	−398	65	181	359	244	77	−523	−964
Bhutan	−23	−11	−18	−59	−37	−45	...	...
India	−9,680	−1,178	−3,526	−315	−2,315	−5,050	−6,300	−8,000
Maldives	9	−9	−20	−48	−16	−34	...	...
Nepal	−289	−304	−181	−223	−352	−315	−366	−375
Pakistan	−1,653	−1,395	−1,869	−2,935	−2,902	−3,026	−3,099	−3,153
Sri Lanka	−298	−595	−451	−382	−546	512	−426	−505

DICATORS : SAARC Countries - III

Balance of Payments on Current Account (per cent of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	-3.3	-1.0	-1.6	-1.0	-1.5	-2.1	-2.2	-2.5
Bangladesh	-2.0	0.3	0.7	1.4	0.9	0.3	1.6	-2.8
Bhutan	-8.1	-4.7	-7.5	-24.8	-14.0	-15.6	...	...
India	-3.2	-0.4	-1.3	0.1	-0.8	-1.6	-1.7	-2.0
Maldives	5.9	-5.5	-10.3	-21.0	-6.1	-11.2	...	...
Nepal	-8.2	-9.4	-5.2	-6.3	-7.7	-7.1	-8.2	-7.6
Pakistan	-4.1	-3.1	-3.8	-5.7	-5.6	-5.1	-4.7	-4.3
Sri Lanka	-3.7	-6.7	-4.7	-3.7	-4.7	-4.0	-3.1	-3.4

External Debt Outstanding ($ million)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia	122,538	128,399	136,608	142,229	155,491	163,682	178,456	191,493
Bangladesh	12,234	12,906	14,167	14,939	16,569	17,469	18,969	19,769
Bhutan	84	86	84	85	87	...	...	...
India	81,983	83,947	89,823	92,104	98,990	104,300	114,000	125,700
Maldives	96	97	116	131	135	...	...	...
Nepal	1,640	1,772	1,805	2,004	2,320	2,368	2,586	2,824
Pakistan	20,661	23,046	24,194	26,173	29,579	31,945	34,501	34,000
Sri Lanka	5,840	6,545	6,420	6,793	7,811	7,600	8,400	9,200

Debt-Service Ratio (per cent)

	1990	1991	1992	1993	1994	1995	1996	1997
South Asia								
Bangladesh	28.5	20.3	17.1	14.6	15.2	13.0	13.0	13.0
Bhutan	7.4	5.4	6.7	18.0	20.5	14.8	...	...
India	30.1	27.7	27.3	26.1	26.3	26.7	26.8	27.6
Maldives	5.5	4.5	3.9	4.5	3.7	...	...	...
Nepal	17.6	13.8	11.9	7.6	6.8	7.8	6.6	6.8
Pakistan	23.2	21.4	24.2	25.2	34.8	33.4	32.4	30.0
Sri Lanka	14.0	14.1	13.7	10.1	9.9	10.0	10.5	11.0

Source: Asian Development Outlook 1996 & 1997, Asian Development Bank 1996.

(Contd. from page 21)

ans, compared to their counterparts elsewhere have advantage of generating integrated concepts, developing sound ideas, and above all, working hard and with spiritualism embedded, for which the developed countries are hungry.

Combating Technology Control Regimes

When India's technology strength is increasing particularly in defence and space areas, the industrially developed countries have evolved the Missile Technology Control Regime (MTCR) which puts embargo on technology flow to developing countries like India. How do we combat this situation.

(a) Let me narrate to you an event that took place in 1986 Our scientists in Defence Research and Development Organisation (DRDO) needed a Supercomputer for fast design of missiles and aircraft. Defence needed a CRAY class supercomputer of 55 Mega Flops capacity. US State Department refused sale of this computer to DRDO. This refusal triggered the minds of Indian scientists to meet the challenge. DRDO established an exclusive laboratory for development of fast processing computer In three years time, we developed a supercomputer of a class five times faster than CRAY-XMP for the design of missile systems. Thanks for their refusals, we have now developed and installed supercomputer of 1800 Mega Flop capacity as compared to 55 Mega Flop of CRAY-XMP. There are multiple agencies for development and production of this class of supercomputer in India.

(b) For AGNI, a technology demonstrator, scientists at DRDO have developed a carbon-carbon heat shield which can withstand more than 3500° celcius temperature during its hypersonic re-entry phase. This technology known only to two other countries is a safeguarded one and our team led by Smt. Rohini Devi developed this technology and successfully tested the re-entry heat shield made of carbon-carbon, in AGNI mission. The same carbon-carbon material with its multi-directional characteristic is used to make a tilting bileaflet disc in a heart-valve. Besides, heart-valve disc, excellent bio-combatibility of this material can revolutionise hip-bone prosthesis and improve quality of fracture fixation plates. Like Smt. Rohini Devi, we have more than 500 women scientists in DRDO, contributing for the development of hi-technology devices to combat the Control Regimes.

(c) Just two days ago, I was at Indian Institute of Technology (IIT), Delhi, participating in an important occasion. The Centre for Applied Research in Electronics (CARE) of the IIT has successfully completed two major projects of national importance for one of our programmes. One of them is X-Band Twin Toroid Phase shifter with Driver that provides multi-directional tracking of multi-targets and will be used for the Phased Array Radar Programme The second item, is the Millimeter-wave IC Components, that are used to build missile seeker head. The research team was led by Prof Bharati Bhatt of IIT. This is a very important area and very few countries have a monopoly and this also comes under the Missile Technology Control Regimes (MTCR). I am informing this in this forum because, I am sure, many of you may achieve the success one day, as that of Prof. Bharathi Bhat and Smt. Rohini Devi and many other scientists of our country are contributing with their teams for such missions.

Technology as Wealth Generator

In the present global scenario, only strength respects strength. There is no doubt, therefore, that indigenous technology development is the only key for India to attain more strength. Technology is the main driver not only for the defence capability but also for economic strength and national development. The need of the hour is technological excellence and self-reliance. Technology that transforms itself as a weapon, can also be harnessed for generating national wealth. So let us arm India with technology

With our natural resources, large base of scientific and technological manpower and with our national will and priorities, India must enter the twenty-first century to take its due place in the line of developed nations

Technology Vision 2020 for India

A nation without a 'vision' perishes. It is the vision that drives the progress of the nation. More that 500 experts drawn from various fields have prepared the 'Technology Vision 2020' document for the country, which was released by the Prime Minister in August 1996.

The Technology Vision Report aims to develop variety of indigenous technologies to transform India into a developed nation by the year 2020. With effective use of indigenously developed technologies in the next quarter century some of the visible results by the year 2020 will be enhanced wealth of the nation, abundant production in various areas, well being of the people

and national security.

This vision document consists of 17 major technology packages. It deals with agricultural infrastructure & production, food-processing, health care, electric power, water-ways, life sciences & bio-technology, inland transportation, civil aviation, engineering industries, electronics, information & communication technology, material technologies and strategic industries etc.

Partnership for Realising the Vision

Implementation of this vision calls for partnership towards common goals, harnessing of talents and resources and above all responsive management structure at the national level. Such a partnership has to be wide based encompassing government, civil servants, industry, workers, farmers, students, universities & research institutions, non-government social organi-sations and other citizens so as to produce the essential magnitude of the driving force.

The vision leads to tens of missions and thereby each mission in-turn results into hundreds of programmes and projects. The missions and projects can be identified by the Government Departments and R&D organisations. That will result in technology flowing to the industry and other users in semi-organised and non-organised sectors. However, total involvement of all concerned is essential to ensure that the industry produces and provides people with quality goods and services so that the required results at the national level are achieved in a time-bound manner.

The success of the vision, it's missions and it's programmes/projects should lead to the better welfare of the people. The strategy & resource management, technology competence and high production, in an integrated way, are the driving forces necessary for prosperity of the people.

Nations are built by imaginations, visions and untiring efforts with enthusiasm of generations. We all have a great responsibility to build tomorrow's India that will be strong in all fields, may it be welfare, technology, industrial infrastructure, economic prosperity, or societal unity and happiness.

Every human being is created in the image of Almighty, and the person is unique in his or her own capacity. But they are not equal as no individual's capacity can be compared with each other. As our great saint Poet Thiruvalluvar said, 2000 years ago, *"Achievement of human being is proportional to how high he or she thinks"*.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
March 6-8, 1997	CALIBER-97	Theme IT Applications in Academic Libraries in India With Emphasis on Network Services and Information Sharing	INFLIBNET and Thapr Institute of Engineering and Technology, Patiala	S.M. Salgar, INFLIBNET Centre, P.B. No. 4116, Navrangpura, Ahmedabad-380 009 OR Prof. Janak Raj, University Librarian, Thapar Instt. of Engineering and Technology. Patiala-147 001.
March 13-15, 1997	Restructuring of Public Enterprises at State Level	To provide an approach to initiate plans of action to restructure State Level Public Enterprises [SLPEs].	School of Management, Pondicherry University, Pondicherry	Dr. R. Prabhakara Raya, Workshop Coordinator. School of Management, Pondicherry University, Pondicherry-605 014
July 23-25, 1997	International Seminar on Researches in Teacher Empowerment and School Effectiveness at the Primary Stage	Theme Teacher Empowerment and School Effectiveness	National Council of Educational Research and Training, New Delhi	Dr. Ved Prakash Prof & Head, DPEPCRG. NCERT, Sri Aurobindo Marg, New Delhi-110 016

SCHOOL OF CORRESPONDENCE COURSES
ANDHRA UNIVERSITY, VISAKHAPATNAM

ADMISSION NOTIFICATION

Admission into B.A., B.Com. and B.Sc. Courses — Supplementary Batch 1996-97

The School of Correspondence Courses invites applications from the candidates residing in India for admission into B.A., B.Com., and B.Sc. Degree Courses for the academic year 1996-97 as Supplementary Batch.

The 1st year University EXaminations for these candidates will be held in September/ October, 1997 and 2nd and 3rd year Examinations will be held with a gap of one year each, thereafter.

COURSES	ELIGIBILITY
1. B.A. (both English and Telugu media) with the combinations of Special Telugu, Special English, Special Hindi, History, Economics, Politics, Public Administration, Sociology and Mathematics.	Intermediate/P.U.C. or equivalent or pass in Entrance Examination conducted by this School.
2. B.Com. (both English and Telugu media)	Intermediate/P.U.C. or equivalent or pass in Entrance Examination conducted by this School
3. B.Sc. (English medium only)	Intermediate/P.U.C. or equivalent with Physical Sciences and Mathematics.

Applications will be issued from the 10th February, 1997. Filled in applications should reach the undersigned on or before 12-3-1997.

Intending candidates may write to the undersigned by Designation for application form and prospectus by sending Rs. 40/- by Demand Draft/Money Order in favour of the Director, School of Correspondence Courses, Andhra University, Visakhapatnam-530 003. The candidates have to write their names, address and course for which they want the prospectus on the back of the D.D. or M.O. coupon whichever is applicable. The candidates may also remit cash at the CASH COUNTER of the School of Correspondence Courses towards Application forms and prospectus. **Postal Orders and cheques will not be accepted.**

The prescribed application forms are also available at the following places on payment of Rs. 40/- through Demand Draft drawn in favour of the Director, School of Correspondence Courses, Andhra University, Visakhapatnam-530 003.

OTHER PLACES OF SALE OF APPLICATIONS :

a) At New Delhi

1) Sales Counter, Association of Indian Universities, A.I.U. House, 16 Kotla Marg, New Delhi.

2) Sri Venkateswara College, Dhaula Khuan, New Delhi

b) Study Centres :

1) Government College, Srikakulam, 2) M.R. College, Vizianagaram, 3) Mrs. A.V.N. College, Visakhapatnam, 4) Govt College, Rajahmundry; 5) R.P.Govt. College, Kakinada; 6) Sir C.R.R. College, Eluru, 7) S.R.R. & C.V.R. Govt College, Vijayawada; 8) A.C.College, Guntur; 9) D.N.R. College, Bhimavaram; 10) Silver Jubilee College, Kurnool, 11) Indian Institute of Management and Commerce, Hyderabad; 12) A.M.A.L. College, Anakapalle; 13) R.S.R.K.R.R. College, Bobbili; 14) Noble College, Machilipatnam; 15) V.S.R. & N.V.R. College, Tenali, 16) Govt Degree College, Narasannapeta; 17) S.G.S. College, Jaggaiahpeta; 18) S.S. & N. College, Narasaraopet; 19) S.K.B.R. College, Amalapuram; 20) V.S.R. & Y.R.N. College, Chirala; 21) V.V. & M. College, Ongole, 22) Sri Sarvodaya College, Nellore, 23) B.V.K. College, Visakhapatnam; 24) Y.N.M. College, Narsapur; 25) S.V.K.P. & Dr. K.S. Raju Arts & Science College, Penugonda; 26) Progressive Degree College, Ameerpet, Hyderabad; 27) Govt. College, Narsipatnam, 28) S.A.S. College, Vijayawada and 29) C.S.R. Sarma College, Ongole.

The School has no agents and takes no responsibility for prospectus issued and promises made for admission by any other institution.

Visakhapatnam,
Dt. 31.1.97.

Prof.V. Abraham
DIRECTOR

N.B.: The applications should clearly mention in their requisition that they require 'Admission application form for Supplementary Batch'.

SPECIAL NOTE FOR THE CANDIDATES WHO APPEARED FOR B.A./B.COM. ENTRANCE EXAMINATION IN DECEMBER, 1996.

The results of B.A./B.Com. Entrance Examination held in December, 1996 will be announced shortly and the successful candidates in the said examination need not aply for Admission application form and prospectus for admission into first year degree course. The School will arrange to send the Admission application form and prospectus along with marks statement-cum-eligibility certificate to such candidates after the results are announced. *They have to pay an amount of Rs. 40/- towards* the cost of admission application form and prospectus alongwith the prescribed tuition fee at the time of admission. However, the duly filled-in admission along with the necessary enclosures including Demand Draft/Money Order receipt towards prescribed fee should reach the School of Correspondence Courses on or before the prescribed last date.

CAMPUS NEWS

E-9 Educators Meet

"Education must contribute to sustainable development and promotion of peace. For this, efforts need to extend beyond the school system, including all society, everywhere", said Dr. Chitra Naik, Member, Planning Commission while inaugurating a three-day conference of educationists from the nine most populous countries, known as E-9 countries in New Delhi recently. The conference intended to evolve innovative strategies of teacher education to ensure Education for All by the turn of the century.

"For developing countries, adopting a mission mode in the sphere of education and adjusting the role of teachers to global changes is a priority", said Ms Naik.

Ms Naik felt the achievement of minimum levels of learning, at least upto Grade-3, had to be woven into the teacher education syllabus, whether pre-service or in service, since universalisation of primary education was the priority.

"Teachers and learners interacting together with a flexible curriculum as the basis should be the scene of the future," she said, adding, "this should be possible since in recent years, many avenues of learning have opened up to take learning beyond the classroom."

She emphasised the need to concentrate on developing good resource materials, widely adaptable, for in-service teacher education with a sense of urgency. Exchange of innovative materials among E-9 countries and their collaboration to further refine these would be a great contribution to need-based teacher education.

She suggested launching in-service teacher education through the "mobile training team" approach. In the first phase, such mobile teams could start functioning in each participating country. In the second phase, they could cover different regions of E-9 countries.

"It's crucial to chart out these efforts in time-bound programmes. This would enable both national and international agencies to build up a well-designed new system of teacher education for EFA", said Ms Naik.

This was the first international meet hosted by the National Council for Teacher Education in collaboration with UNESCO. The countries which participated in the meet included Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan.

Seminar on National Education Policy

The Vice-Chancellor of Guru Jambheshwar University, Prof. K.L. Johar, stressed the need for adopting an integrated approach combining social, spiritual and moral aspects in the education system. He was inaugurating a two-day workshop on the "State Programme of action on national education policy" in Hisar recently. He said that liberalisation of economy had thrown new challenges in the field of higher education. He suggested development of a new system of education with schemes like self-financing by students and increased co-operation between the industry and educational institutions.

Mr. S.K. Saxena, Director, Higher Education, in his keynote address, emphasised the need for making rapid strides in the field of higher education following the success achieved in constructing roads and providing electricity to every village in the state. He also stressed the need for redesigning curricula, strengthening library and laboratory facility, retraining teachers and incorporating computer and information technology into the education system. He also drew the attention of the participants to the problem of professional ethics and accountability.

The Pro-Vice-Chancellor, Prof. K.K. Agarwal, deliberated on the role of computer and emerging communication technology. Lamenting upon the prevailing system of compartmentalisation of education into primary, secondary and higher education. Professor Agarwal advocated a modular system to remove the rigidity from the existing system.

Mr. B.R. Vashisht, Joint Director, Higher Education, talked about the need to remove imbalances, between the strength of trained students and the existing job opportunities.

Organised by the Directorate of Higher Education, Haryana, the workshop was attended by principals and teachers of government and non-government colleges of Hisar, Sirsa, Jind, Bhiwani and Mahenderagarh districts.

Panjab Varsity Convocation

"The education system in India, by and large, continues to be a legacy of the British. No comprehensive national overhaul of the inherited colonial system has been taken since Independence to ensure that it reflects the values and traditions of our ancient culture and civilisation", observed Mr. Justice Kumaran Sreedharan, Chief Justice of the Punjab and Haryana High Court. He was delivering the convocation address at the 47th annual convocation of Panjab University in Chandigarh recently.

Mr Justice Sreedharan said real education must enable a student to 'discover' for himself. Many classrooms across the country were spoonfeeding the students in one form or the other whereby lessons become a substitute for an intellectual exercise to develop qualities of the mind The present system stifled independent study, creative thinking, initiative, imagination and self-confidence.

The need of the hour was to *improve ourselves. It would be* beneficial to our family and society as a whole. If our family relationships were full of conflicts and struggle, the tension was likely to spread into other spheres as well, the judge said.

Mr. Justice Sreedharan said all religions preached peace but religion was also a major source of violent conflicts. Similar was the case with science and many socio-economic systems. Violence was, perhaps, built into the essence of human consciousness. All culture tell us that there were creative powers within us which could bring about a transformation in human behaviour.

The Chief-Justice exhorted the academicians not to fall a prey to vested interests and petty intrigues for power politics. He also cautioned the students to be vigilant against manipulations of petty politicians who seek to meddle in the affairs of universities for selfish goals. Students must instead draw inspiration from centuries old traditions. "The new consumer culture that we are following promotes a culture of debt", he added.

A total of 439 students received their medals, degrees and prizes on the occasion.

IHRC Meet at Durgawati Varsity

Union Minister for Human Resource Development, Sri S R Bommai, said that standing on the threshold of another millennium, historians leave behind them a promise of peace, fast economic transformation, administrative transparency and package of universal education to motivate and inspire themselves. He was presiding over the 56th session of *Indian Historical Record Commission* (IHRC) at the Rani Durgawati University in Jabalpur recently. He said the Commission was such an organisation of archivists and historians predominantly engaged in processing and promoting their documentary heritage.

Mr. Bommai said that documentation was interlinked with its fast dissemination and in the present day of information through superhighways like internet one had to be alert so that information in records and documents and other media was professionally processed and made available for use without much difficulty.

Public records act passed by Parliament would be administratively effective for achieving optimum result in records management activities, he said.

Over 100 noted historians from all over the country participated in the 2-day session which was inaugurated by state general administration law and parliamentary affairs minister, Mr. Rajendra Prasad Shukla.

PG Course in Homoeopathy

Dr. C S Bhaskaran, Vice-Chancellor, University of Health Sciences, said that the university would introduce postgraduate course in Homoeopathy from 1997-98 academic year and the entrance test for the course would be held in the month of April or May this year He was inaugurating the one-day scientific seminar "Quest 97" organised by twin-cities chapter of Indian Institute of Homoeopathic Physicians in Hyderabad recently. Dr. Bhaskaran said that the degrees in Homoeopathy issued by the university were recently included in the second schedule of Homoeopathy Central Council Act.

"This will enable the Homoeopathic graduates to apply for the several State and Central government jobs besides permitting them to practice outside the State", he said and observed that Homoeopathy was effective not only treating the chronic diseases but also acute and epidemic disorders.

Dr. N S Prasant, President,

Andhra Pradesh State branch of IIHP, underscored the need to conduct the continuing medical education programmes to the Homoeopathic practitioners to make them aware of the recent developments in the medicine. About 200 delegates from all over the State attended the seminar.

GRI Convocation

Dr. A.T. Ariyaratne, President, Sarvodaya Shramadana Movement, Sri Lanka, attributed corruption in every walk of life to a "faulty system of education" which inculcated a wrong value system in the people. He was delivering the convocation address at the 17th convocation of the Gandhigram Rural Institute (GRI) in Gandhigram recently. He said the absence of a spirit of service had made most of the people selfish and had turned them towards corruption "Instead of being simple and sharing our resources with other, we plan to live ostentations lives imitating others and usurping other people's resources to create great disparity between the rich and the poor".

Dr Ariyaratne stressed that higher education should help not only in creating great scientists and professionals but also great men and women who would use their wisdom and make life better for all.

The concern for others must serve as the basis of higher education. He said education without virtue and spiritual content was meaningless. If the world had a system where wisdom was given instead of mere knowledge, the scientists would not have come out with devastating weapons. Higher education should be grounded on virtue in order to enable the learner widen the horizons of knowledge by widening the noble qualities of heart.

Using education to increase one's own wealth was morally wrong because it meant utilising resources which should go to others who were in need of them. By this attitude, the disparity between the haves and the have nots widened which would lead to a greater devastation in future.

When one attempted to acquire wealth by utilising wisdom grave social problems like crime and poverty were created. He strongly felt that education was not a commodity to be marketed.

Dr. Ariyaratne, the winner of the Gandhi Peace Prize for 1996, said this was an appropriate time to assess the successes and failures in education during the post-Gandhian era and arrive at a consensus on the future directions that would guide us to the next century. The vision of the future need not be conditioned by national interests alone and should extend to the human society as a whole. Since human problems had taken a global perspective their solutions should also be global.

He advocated the practice of simplicity as a way of life and regretted that in an age of consumption, simplicity had lost its influence in many seats of higher learning. Simplicity as philosophy was what the Mahatma practised and it was the essence that one could learn from higher education.

He said higher learning, for Gandhi and Buddha, was transformation of the inner being immersed in a love that embraced both human beings and animals.

Dr. Ariyaratne called for the practice of tolerance, which had the ability to create oneness in the world. He said through a clear vision, moral character and patience the people could work towards the alternative society the Mahatma visualised and named as 'sarvodaya'.

Prof. T.R. Natesan, Vice-Chancellor, who presided, revealed that a LAN system, with a powerful life server hosting 40 terminals, had been installed at the GRI and two new courses, a five-year integrated programme in Development Administration and Panchayati Raj, leading to a master's degree and three-year UG programme in Rural Reconstruction, had been introduced in 1996-97. It had also been planned to have an Internet linkage in the GRI campus to augment the library facilities.

Conference on Conflict Management of Water Resources

An International Conference on Conflict Management of Water Resources Use was held at Agro-Climatic Documentation and Dissemination Centre, Sardar Patel Institute of Economic & Social Research, Ahmedabad. This event was in conjunction with the inauguration of Mahatma Gandhi International Training Centre for Conflict Prevention and Management and Institute of Studies in Quest for Non-violence of the Gujarat Vidyapith.

The main objective of this centre is to offer management training to academics, public officials at all levels, politicians, business executives, etc about how to cooperate, negotiate, prevent conflict and make and keep peace by non-violent means. It will be in the area of international relations, energy-environmental conflicts, water resources disputes, litigations, conflicts in business, etc.

The objective of this international conference was to discuss how the methods and techniques of the social sciences and conflict management in particular, could be applied to manage some of the conflict problems associated with inland and underground water use. The participants discussed these issues and suggested how cooperation and not conformation amongst different interest groups could lessen the conflict. In addition to the general framework, the participants also presented ideas about cooperative plans for specific river projects in the world.

The Conference was sponsored by UNICEF, State University of New York, Sardar Patel Institute of Economic and Social Research and Agro-climatic Documentation and Dissemination Centre with the cooperation of the World Bank, UNDP and many other National and International Organisations.

The topics discussed at the conferences included (i) Non-violence, Conflict Management and World Peace; (ii) Conflict Management and Water Resources; (iii) Water and Development; (iv) Economic Development, Resource Use and Energy Environment Conflict; and (v) Resource and Economic Cooperation.

Inaugurating the conference Shri Sanat Mehta, Member of Parliament, emphasised three fundamental Gandhian principles. Prof. Ramlal Parikh, Chancellor, Gujarat Vidya Peeth discussed how Gandhian principles could be used for conflict management. Prof. Manas Chatterji, in his introductory remarks, explained the objective of the Mahatma Gandhi International Training Centre for Conflict Prevention and Management.

In the first session Nagaharu Hayabusa, Senior Staff Correspondent, Asahi Shimbun, Japan indicated the nature of economic and political security in east Asia with particular reference to Japan and China. Prof. DN Pathak, Gujarat Vidyapeeth, indicated how the Gandhian principle values, norms and life styles could be used to solve conflict problems.

Water expert from Israel Dr. Saul Arlosoroff outlined, in details, major problems of water development, in poor countries and emphasised on water conservation and advanced techniques of water use. Mr. CC Patel, well-known water expert in India and Bangladesh on water dispute, presented scenario about the dispute and his role of solving the problem. Dr. A Elhance, who has done extensive studies on river basin worldwide talked about the immediate needs of cooperation in international river basin without which there was a bleak future of international degradation. Prof. PA Raj and Amitab Kundu, SP Kashyap and VB Patel discussed how water policy could be used for economic development for backward areas. Dr. Pravin Seth stressed the role of NGOs and States in the completion of the Narmada Project. Dr. Jayant Patil, former Member, Planning Commission, emphasised that decentralisation through Panchayat Raj was an urgent necessity to solve the water problem in rural areas. Prof. Chatterji indicated how the tools of economics, social science and peace science could be used to adopt objective value from policies in solving or preventing conflicts. He emphasised the need of prevention because it saves lot of financial resources and human suffering. Prof. Allain Sallez, indicated how we could learn the lesson from Europe in managing environmental problem in a country like India. Mr. M.M. Sainju, former Ambassador of Nepal in US, narrated his experience on water resource management in Nepal in the context of South Asia. Shri SK Shelat, Chief Secretary, Govt of Gujarat, who presided over one of the sessions, detailed how administrative machinery could be used to implement water policies. A Canadian Scholar Dr. David Bank indicated how grassroot cooperation in Western Canada was handling some of the Ground Water Conflict problem.

Prof. Y.K. Alagh, Minister of Planning, Science and Technology, Govt. of India, at the valedictory function, narrated his experience dealing with Kavery river water and handling the water disputes. He also presented a paper on the common theme Cooperation and not Confrontation can only solve the problem.

Karnataka Institutes Awards for Lecturers

The Karnataka Higher Education Minister Mr. B. Somashekhar announced that the government would give awards to three lecturers from government colleges and three from private colleges every year for their meritorious service in the field of higher education. He said the awardees would be selected based on their service by an experts' committee, and not on any other considerations. He made this announcement while speaking at a panel discussion on "Graduate Education — Need for Quality Management", organised by the Bangalore University First Grade College Principals' Association, in association with the First Computer Institution in Bangalore recently.

He said the teachers could play an important role to improve the quality of education. Also they could mould good society, he added. The country's development depended on the character of people built on the quality of education given by the teachers, he observed.

Dr. G D Sharma, Secretary, UGC, Dr. Mumtaz Ahmed Khan, founder, Al-Ameen Institutions, BWSSB Chairman Mr. J P Sharma, former vice-chancellor of the Gulbarga University Dr. N Rudraiah also spoke on the occasion.

Haryana Plans Vocational Courses

The Haryana Government plans to start short-term vocational courses in the government and non-government colleges to end unemployment among the youth. This was stated by Mr. Ramesh Kaushik, Minister of State for Technical Education and Home, at the annual prize distribution function of GVM Girls College in Sonepat recently.

He said the opening of such courses would enable students to become self-dependent and they would not run after white-collar jobs.

Mr. Arvind Sharma, MP, who presided, advised the students to confine themselves to studies and shun agitations.

Dr. Shakuntala Gakhar, Principal of the College, in her annual report, highlighted the achievements of the college in various fields.

News from Agricultural Universities

National Symposium on Statistics

Prof. Ram Bilas Sharma, Education Minister, Haryana said that education should not be limited to merely source of earning bread and butter but for the development and welfare of the mankind and society at large. He was inaugurating the national symposium on Statistics with Focus on application in Agriculture and Allied Sciences and 2nd Annual Conference of Indian Society of Information Theory and Applications at the Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar recently. He said that for the harmonious development of the common man as also of the society, it was imperative that all research findings and concepts of science were interpreted and published in Hindi. The Minister urged the researchers and mathematicians to falsify the myth that science could be taught and disseminated in English language only. He also urged the participants to enhance and accelerate their researchers in tune with the rising population and unemployment. Recalling the successes achieved by the nation in the field of Mathematics and Statistics since ancient times, the Minister called upon the participants to maintain ancient honour and expand the use of Mathematics and Statistics in all branches of knowledge.

Prof. J.B. Chowdhury, Vice-Chancellor, who presided, said that statistics was such a vital aspect that it made the monitoring and processing of projects an easy task. Besides, it also helped planners in formulating effective strategies. He said application of statistics in agriculture and animal sciences had been significant. However, the models, procedures and experimental designs developed by mathematicians and statisticians had found wide application in many branches of science also.

The Vice-Chancellor regretted that statistics was sometimes misused either deliberately or due to the lack of knowledge. He said, "In fact Statistics is a technique to deal with the data to arrive at correct conclusion and decision. If intelligently used it gives wonderful results and if misused it can be disastrous".

Dr. J.N. Kapur, President, Indian Society of Information Theory and Applications, in his keynote address, said that Mathematics was fascinating because of its wonderful concepts, theorems and results and also because of its great application in all walks of life.

Dr. Kapur said that it was a matter of great concern that in India, particularly in Haryana, fear and anxiety for the subject of Mathematics were persisting especially in rural schools. Giving reasons, he said, defective teaching methods, indifferent attitude of teachers and unawarenss of general public were some to mention. He called upon the Mathematics teachers to make concerted efforts in order to eliminate myth about Mathematics. They should ensure support and encouragement to students for opting Mathematics keeping in view its importance in all competitive examinations.

During the 3-day conference, over 100 participants from all over India reviewed the successes achieved by the nation in this field. Strategy for expanding the sphere of Maths and Statistics for the development of agriculture and allied sciences was also formulated.

BIT Convocation

The Union Minister of State for Planning, Programme Implementation, Science and Technology, Dr. Y.K. Alagh, said that India needed substantial agro institutional reforms for higher agricultural productivity. The reforms were required as the seeds of the existing self-pollinated varieties were largely non-traded. But, the hybrids would have to be purchased each season, he added. Dr. Alagh made these observations in his convocation address at the Birla Institute of Technology delivered in absentia by the Vice-Chancellor, Dr. H.C. Pandey.

Dr. Alagh, however, said the extension of strategy for the hybrids would also benefit the high yielding varieties programme where larger grains were possible.

"Our breeders have successfully raised high yielding varieties of wheat and the country is now concentrating on growing special varieties keeping in view the moisture, drainage and climate conditions", he said.

The Minister noted that the country needed a very friendly policy on import of seeds in view of the fact that "we cannot be efficient in seed production for all crops."

He, however, said the country had a small but fairly effective programme of biotechnological research for seed production which had produced good results in some areas. In tissue culture, some of the largest centres of the world were being operated by Tata Energy Research Institute.

India was also developing a network of genetic materials and programmes of adoption for meeting plant material requirements, he said.

The Minister noted that the country had comparative advantage in technological research in some crops, including cotton and oilseeds. Stating that the marketing and price support system for desired technological progress in agro-sector was deficient, Dr. Alagh said India had, however, produced the first high yielding millets earlier in the decade and expressed confidence about achieving a four per cent growth rate for cereal crops.

Noting that land in the country had become inelastic, Dr. Alagh said the burgeoning demand for food had to be met through increased productivity. The agricultural research establishment in the country was aiming at ensuring compatibility with the reform programmes, and a modernisation and restructuring project with assistance from the World Bank was at an advanced stage of completion, he added.

A National Rural Education Council had been set up for integrating knowledge with productive processes in the countryside, he said.

Underlining the growth in export based-agro demand, he said the Rural Infrastructure Development Fund had served its purpose as both domestic and foreign investors were making huge investments in this sector.

The Minister expressed optimism that one large project could be had in each district of the country to enable inter-linking of regional, national and global markets.

Assuring that the India would meet international obligations, he urged other countries not to impose extra-legal restrictions in the name of cooperation.

News from UGC

Countrywide Classroom Programme

Between 1st and 7th March, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

1st Transmission

6.00 a.m. to 7.00 a.m

1.3.97

"A Talk with Prof. Anthony Hewish on Pulsars"

"Dashavatara-II "

"Towards Cleaner and Greener Environment-II"

2.3.97

"Theatre Architecture-VIII: Japan's Noh Theatre"

"Travel and Tourism"

"Why Swim at All?"

4.3.97

"Electromagnetism-I"

"Eye Problems and Prevention"

"Energy Flow-I:A Handful of Energy"

6.3.97

"Wilde Memories-VI"

"Turmeric a Spice that Heals"

"Learning Disabilities"

IInd Transmission

1.00 p.m. to 2.00 p.m.

1.3.97

"The Art of Khatamband"

"Understanding Cinema-VI: Sound-I"

"Simple Exercise"

2.3.97

No Telecast

3.3.97

"Say it With Slides"

"Classical Mechanics-XII: Rigid Bodies: Kinematics"

"Winds of Change. Agriculture Marketing"

4.3.97

"Anaesthesia-150 Years: A Quick Overview"

"Integral Pedagogy Process V: Action and Evolution"

"Poems from Gitanjali"

5.3.97

"Food Technology for Entrepreneurs"

"The Great Encounter-II"

"Optical Couplers"

6.3.97

"Planet Earth: Mountains"

"Literature in Society Renaissance-IV: Literature in Politics"

"Harnessing Sunlight through Optics"

7.3.97

"Geometric Transformation: Reflection"

"Problem Child"

"Mangrove: Facts and Policies"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

3.3.97

"कथाकार प्रेम चन्द"

5.3.97

"स्वर्गरक्षक हिमालय"

"अतीत की कहानी, इमारतों की जुबानी"

7.3.97

"मोठ दाल : मरुस्थलीय फसल"

News from Abroad

Training Course on HRM

The Asian Institute of Technology, Bangkok, proposes to organise a Training Course on Human Resource Management on 31 March - 11 April 1997.

The two-week course will focus on strategies and techniques of optimal human resource utilization for enhancing individual organizational compatibility, and involving employees in individual and group efforts. In addition, it focuses on developing people management skills and ways of identifying and managing employee defensive mechanisms for positive growth and development.

The course contents include : *Module 1* : HRM Basic Concepts — Concept and process of human resource management; Psychology of human behaviour; Organization structure and design and HRM; *Module 2* : Enhancing Employee Compatibility with Task, Team and Organization-HRM Mechanisms — People Centered Management Practices for Minimizing Ability Gap and Synergy Gap; Group Dynamics and Leadership, Team Building and Conflict Management, Innovation through Human Resources; Personnel Administration: Manpower Planning, Recruitment and Selection — Strategies for Picking Winners, Employees Compensation and Reward Systems; Design and Development of Performance Appraisal Systems; Human Resource Information Systems.

Further enquiries may be addressed to : Admission, Continuing Education Centre, Asian Institute of Technology G.P.O. Box - 2754, Bangkok 10501, Thailand.

S.S.L. Jain P.G. College, Vidisha (M.P.)

Affiliated to Barkatullah Vishwavidyalaya, Bhopal (M.P.)

Advertisement No : 2/96

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Applications are invited for the following vacant posts of Asst. Professors in our College in the scale of (2200-4000) with D.A. as per rules.

S.No.	Subject	No. of posts	Category
01	Physics	One	Schedule Tribe
02	Botany	One	Schedule Castes
03	Mathematics	One	O.B.C.
04	Economics	One	Gen.

All the above mentioned posts are regular. Qualification as per M.P. Govt. rules. Application forms can be had from the college office on payment of Rs. 50/- by D.D/I.P.O. in favour of Principal, S.S.L. Jain College, Vidisha. Last date for receiving complete application form in the office is **31st March 1997**.

Note :- Those who applied earlier are not needed to apply.

Dr. S.C. Jain
PRINCIPAL

BOOK REVIEW

USEFUL TOOL

Sanjaya Mishra*

M.P. Satija and S.P. Agrawal. Book Numbers: Some Indian Methods. 2nd rev. ed. New Delhi, Reliance Publishing House, 1996. Pp. viii+79. Rs. 95/-.

In spite of the tremendous development in the field of computer technology, organisation of knowledge and the so called 'paperless society', books are being published in large numbers and they make a beeline into the libraries almost daily. For these books to be organised and accessible, we need a system for arranging them in the book shelves in a linear sequence, which is called the 'Classification system' or classified arrangement based on the subject matter content of the books. On the basis of classification system, a specific notation is assigned to every book in the libraries. But still there can be many books in a particular class (or with a specific notation), and therefore to fix the position of each book in the shelves, we need book numbers alongwith the class number so derived from the classification system. There are a variety of book numbering systems. The book under review deals with some of the Indian methods of book numbering system.

This small and handy book has been divided into five chapters. The first chapter—'Book Numbers : What and why' explains the nature and functions of book numbers and their importance in the light of the first law of Library Science—Books are for use. It gives a brief history of book numbers since Melvil Dewey. The second, third and fourth chapters discuss the Bashiruddin system, Ranganathan system and Dickinson system of book numbering respectively. These three chapters provide short, but useful and relevant biographical sketch of their respective inventor. In chapter two the Bashiruddin system is enumerated in Hindi Language, which can be used to "assign author number to any name in Devnagari script (p.12)". It prescribes seven rules for assignment of numbers. A few examples of worked out author numbers are given in Appendix-1 for better understanding. Perhaps, it would have been better to describe Bashiruddin system for Devnagri script in English, especially the seven rules to make them more popular. Chapter five —"Collection Number and call number" explains the purpose of collection number and how it is assigned. It also gives practical tips for transcribing various parts of a call number (Collection number +Class number+Book number). In Appendix-IV, Asa Don Dickinson's table of author numbers is given which covers a major part of the book (27 pages).

The significant aspects of this edition (earlier edition was published by Concept Publishing Company) of the book are improved organisation of thought in different chapters and a select bibliography on book numbers from 1916-1994, which can be called comprehensive in itself, as the amount of literature on the topic of book numbers is actually "thin and rare". The book will be useful for all types of libraries. But it would be of immense help for libraries using ad hoc methods for Devnagari scripts, especially those using Dewey Decimal system of classification, as the method designed by Bashiruddin and Dickinson are not known to many and this book has perhaps become successful in a way to disseminate information about their existence. However libraries using colon classification may not find any thing new here (as the colon book number system is there in the schedule itself) except for a comprehensive bibliography on the topic.

The book is written in a simple and lucid style and one can complete it in one go (as I did it). Indeed the book is a must read for pupils of classification and can be considered as a simple and useful tool for all types of libraries.

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* *Lecturer, Staff Training and Research Institute of Distance Education, IGNOU, Maidan Garhi, New Delhi-110 068.*

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

AGRICULTURAL & VETERINARY SCIENCES

Agriculture

1. Ajmera, Bithal Das. **Epidemiology, pathogenesis and management of bacterial blight of cotton.** Rajasthan Agril. Dr J P Jain.

2. Ashok Kumar. **Studies on heterosis and resistance to alternari blight in tomato (Lycopersicon esculentum mill).** YS Parmar.

3. Bangarva, Gopal Singh. **A study on technological gap in improved groundnut production technology in Chittorgarh and Udaipur Districts of Rajasthan.** Rajasthan Agril. Dr B M Sharma.

4. Chandiramani, Girish A. **Laboratory and field evaluation of joint action of insecticides.** Rajasthan Agril. Dr C L Kaul.

5. Chaudhary, Hamraj. **Studies on the toxicity, bio-efficiency, residues and allied problems of some insecticides against pests of soybean (Glycine max (L.) merrill).** Rajasthan Agril. Dr HCL Gupta.

6. Chaudhary, Sita Ram. **Evaluation of quality of irrigation water in relation to seed-bed modifications and drainage** *conditions. Rajasthan Agril Dr Ram Deo.*

7. Chauhan, Subhash Chandra. **Efficacy of soil amendments on physical and chemical properties of the soil and crop performance under effluent polluted area adjoining to zinc smelter, Debari.** Rajasthan Agril. Dr K L Totawat

8. Dabi, Raj Kumar. **Studies on insect pests of mothbean, Vigna aconitifolia (jacq) marechal and their control.** Rajasthan Agril Dr P C Jain.

9. Dave, Pinaki Vallabh. **Nature of responses to applied phosphate and zinc in dominant black series of soil of Southern Rajasthan.** Rajasthan Agril. Dr S N Saxena.

10. Doshi, Anila. **Studies on downy mildew of opium poppy with emphasis on epidemiology and management of the disease.** Rajasthan Agril. Dr B B L Thakore.

11. Gahlot, Rajendra Singh. **Genetic studies on productivity and economic efficiency of the tharparkar cattle in Arid Region.** Rajasthan Agril. Dr K P Pant.

12. Gaur, Ram Babu. **Studies on the factors affecting perennation, development and control of ascochyta blight of gram.** *Rajasthan Agril. Dr R D Singh.*

13. Gulathi, Inderjeet. **Possibilities of improving the physical properties and wheat yield in loamy sand soil through compaction and claying.** Rajasthan Agril. Dr L L Somani

14. Gupta, Pramod Kumar. **Critical limits of phosphorus and zinc and their response alongwith molybdenum with respect to soybean in medium black soil.** Rajasthan Agril. Dr K K Vyas.

15. Hanuman Lal. **Impact of rural agricultural fair on learning behaviour of tribal and non-tribal farmers of Rajasthan.** Rajasthan Agril. Dr S N Mundra.

16. Jain, Dilip Kumar. **Genetical analysis of qualitative and quantitative characters in linseed (Linum usitatissimum L.).** Rajasthan Agril. Dr S C Gupta.

17. *Jain, Kanhaiya lal.* ***Studies on leaf blight of maize (Zea mays L.) caused by helminthosporium mydis nisikado and miyake.*** Rajasthan Agril. Dr K L Kothari.

18. Kaushik, Subodh Kumar. **Contribution of tribal and non-tribal women of south east Rajasthan in farm and home activities.** Rajasthan Agril. Dr O S Rathore

19. Keshavji Nanji Akbari. **Crop response to micronutrients, sulphur and gypsum on red loam soil of Rajasthan.** Rajasthan Agril. Dr Fateh Karan.

20. Khafi, Haji Rammal. **Effect of nitrogen, phosphorus and foliar-applied agro-chemicals on growth, yield and quality of mustard (Brassica juncea (L.) Czern and Coss).** Rajasthan Agril. Dr B L Purwal.

21. Kumawat, Bhanwar Lal. **Effect of levels of compaction and claying on soil physical properties, water use efficiency, nitrogen utilization and crop yield in loamy sand soil of jobner.** Rajasthan Agril Dr L L Somani

22. Mashiat Ali. **Studies on heterosis, combining ability and GXE interaction in wheat (Triticum durum Desf.)** Rajasthan Agril. Dr R P Bhardwaj

23. Mathur, Snehlata. **Studies on epidemiology and control of white rust in mustard (Brassica juncea coss.) caused by Albugo candida (Pers) Kuntze** Rajasthan Agril Dr M K Bhatnagar.

24. Mittal, Kusum. **An analytical study of factors of motivation and constraints for participation in national adult education programme in Udaipur District of Rajasthan.** Rajasthan Agril. Dr S L Intodia

25. Murdia, Prabhash Chandra. **Voluntary intake of low-grade roughage by ruminants.** Rajasthan Agril Dr V V Sharma.

26. Nanda, Udai Singh. **Studies on bruchid management in major stored pulses of Rajasthan.** Rajasthan Agril Dr L S Sharma

27. Paramasiviah, B.M. **Genetics studies on the performance of danish red cattle.** Rajasthan Agril. Dr A L Chaudhary.

28. Parmjit Singh. **Studies on tree spacing in kinnow.** *Punjab* Agril.

29. Patel, J.I. **Studies on the bioecology and management of athalia lugens *proxima KLUG. (Hymenoptera:* Tenthredinidae).** Rajasthan Agril. Dr S C Bhardwaj.

30. Patel, V.M. **Normative whole farm approach for increasing income through new technology and credit with special reference to Banaskantha District of Gujarat.** Rajasthan Agril. Dr S S Acharya.

31. Pathak, Akshey Kumar. **Studies on the reniform nematode rotylenchulus reniformis (Linford and Oliveira, 1940) on tomato (Lycopersicon esculentum Miller).** Rajasthan Agril. Dr B S Yadav.

32. Raghvani, Kunvarji Laxman. **Utilization of economic threshold levels for the management of aphid, lipaphis**

erysimi (kaltenbach) on mustard. Rajasthan Agril. Dr R C Saxena.

33. Rawat, Upendra Singh. **Studies on the availability, uptake and critical limits of zinc in red soils of southern Rajasthan.** Rajasthan Agril. Dr Shriniwas Sharma.

34. Sarailco, Mohammad Hassan. **Bioecology and management of Chilo partellus (Swinhoe).** Rajasthan Agril. Dr R C Saxena.

35. Shah, Mansoor Ali. **Estimation of combining ability and stability parameters in Sorghum (Sorghum bicolor (L.) Moeich).** Rajasthan Agril. Dr P Joshi.

36. Sharma, Fateh Lal. **Problems and prospects of livestock development in tribal areas of Rajasthan.** Rajasthan Agril. Dr S L Intodia.

37. Sharma, Mahabir Prasad. **Studies on inter-relationship of seed microflora of groundnut (Arachis hypogea L.) and rhizosphere microflora with special reference to collar rot pathogen (Aspergillus niger van tieghem).** Rajasthan Agril. Dr B P Chakravorty.

38. Sharma, Suresh Krishan. **A critical study on training and visit system of agricultural extension operating in District Jaipur (Rajasthan).** Rajasthan Agril. Dr B M Sharma

39. Sharma, Vithal. **Combining ability analysis over F1-F4 generations in Sorghum (Sorghum bicolor (L.) Moench).** Rajasthan Agril. Dr P Joshi.

40. Sharma, Yadvender Krishan. ***Effect of dietary protein* concentration and source on the degradability of protein and dry matter in sheep.** Rajasthan Agril 1995. Dr G R Purohit.

41. Singh, K. Sangram. **Impact of extension organisations of Rajasthan agricultural university on the farmers.** Rajasthan. Dr B M Sharma

42. Singh, Sukh Pal. **Line X tester analysis in Raya (Brassica Juncea (L.) Czern and Coss).** Rajasthan Agril. Dr A K Singh.

43. Singh, Vijai Kumar. **Genetic evaluation of performance of karnakul and its crosses with indigenous coarse wool breeds in north western arid region.** Rajasthan Agril. Dr K P Pant.

44. Sohan Raj. **Post-harvest mycofloral deterioration in sugar beet (Beta vulgaris L.).** Rajasthan Agril. Dr J P Agnihotri.

45. Verma, Bajrang Lal. **Studies on the nutrient uptake, water use and growth of pearl millet in relation to soil compaction, nitrogen fertilization and irrigation.** Rajasthan Agril. Dr Ram Deo.

46. Vijai, Ram Gopal. **Studies on body weights and reproduction in medium sized buffaloes.** Rajasthan Agril. Dr L S Jain.

47. Yashavantrao, Bhoite Uddhav. **Comparative performance of economics traits of halfbreds, triple crosses of Gir and their interbred cows.** MP Krishi. Dr. K M Kale, Associate Dean, College of Agriculture, Dhule.

48. Yogendra Singh. **Studies on variability and genetic architecture of local land races of Bajra (Pennisetum typhoides (Burm.,) S. and H.) from Rajasthan.** Rajasthan Agril. Dr A K Singh.

Agronomy

1. Khanpara, Valji Dhanjibhai. **Inter-relationship between sulphur and nitrogen in the growth, yield and quality of mustard (Brassica juncea (L) Czern and Coss) on Vertisol.** Rajasthan Agril. Dr B L Porwal.

2. Nehra, Prem Lal. **Effect of irrigation intensity, levels of nitrogen and method of planting on performance of sugarbeet (Beta vulgaris L.).** Rajasthan Agril. Dr G D Singh.

3. *Padmani, Dhanjibhai Ranchhodbhai.* **Effect of varying levels of irrigation nitrogen and super absorbent polymer on yield and quality of mustard [Brassica juncea (L.) Czern and Coss].** Rajasthan Agril. Dr B L Porwal.

4. Patel, Lavjibhai P. **Maximizing summer groundnut production through cultural manipulation and low-cost inputs in Southern Rajasthan.** Rajasthan Agril. Dr R M Singh.

5. Rathore, Abhey Singh. **Effect of farm manure on the response of opium poppy (Papaver somniferum L.) sown on different dates to nitrogen on vertisols.** Rajasthan Agril. Dr P C Gupta.

6. Shekhawat, Vijai Singh. **Determining stand geometry for select mustard (Brassica juncea (L.) Czern and coss) cultivars in relation to date of sowing.** Rajasthan Agril. Dr J K Verma.

7. Siag, Ram Kumar. **Irrigation scheduling of cotton under varying levels of nitrogen and plant population density.** Rajasthan Agril. Dr J K Verma.

8. Tomar, Bhupal Singh. **Studies on the response of wheat (Triticum aestivum L.) var. Raj. 1482 to varying irrigation regimes and nitrogen levels.** Rajasthan Agril. Dr J K Verma.

Horticulture

1. Akali Sema, K. **Studies on the dynamics of growth, mineral composition of leaves and physico-chemical characteristics of fruit of lemon (Citrus limon burm) C.v. Assam Lemon.** Nagaland. Professor P L Kar.

Veterinary Microbiology

1. Rajpurohit, Shivnarayan. **Studies on potentiation of humoralian cellular immune leterminants against goat pox virus.** Rajasthan Agril. Dr P R Jatkar.

BIOLOGICAL SCIENCES

Biochemistry

1. Banka, Rakesh Ratnakar. **Purification and biochemical studies of fibril forming protein from trichoderma reesei.** IIT Delhi. Dr S Mishra, DBEB, Indian Institute of Technology, Delhi.

2. Nisar Ahmad. **Denaturation transitions in fatted and defatted bovine serum albumin and characterization of denaturation intermediate.** Aligarh. Dr Mohammed H H Abul Qasim.

3. Uberoi, Sukhminder Kaur. **A study on carbohydrate metabolism of chickpea germinating under conditions of salt stress.** Punjab Agril.

Biology

1. Dubey, Anita. **Role of riboflavin in the blue and UV light mediated anthocyanin synthesis.** Devi Ahilya. Dr K N Guruprasad, Department of Biology, Devi Ahilya Vishwavidyalaya, Indore.

Biotechnology

1. Khan, Rizwan Hasan. **Purification and properties of pigeon pealectin.** Aligarh. Professor A H H Salahuddin.

Botany

1. Agrawal, Niva. ***Tissue culture studies on some plants* of medicinal importance.** BRA Bihar. Dr M Naseem, Department of Botany, B.R.A. Bihar University, Muzaffarpur.

2. Kamble, B.R. **Studies on pre-and-post-harvest diseases of groundnut pods in Marathwada.** BR Marathwada. Dr L V Gangawane, Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

3. Sinha, Madan Mohan. **Limnology and biological exploitation of Sikandarpur lake of Muzaffarpur (Bihar).** BR Ambedkar Bihar. Dr Krishna Mohan, Department of Botany, L.S. College, Muzaffarpur.

4. Vijayalakshmi, B. **Microbial investigation of singareni collieries.** Kakatiya. Dr S Subrahmanyam, Reader in Botany, Kakatiya University, Warangal.

Genetics

1. Chetan, G.K. **Systematic survey on the frequency of fragile-X chromosome among subjects with non-specific mental retardation-A prospective study.** NIMHANS. Dr R K Manjunatha, Associate Professor of Human Genetics, NIMHANS, Bangalore.

2. Latha, P. **Cytogenetics of autosomal fragile sites association and their implications in subjects with mental retardation.** NIMHANS. Dr R K Manjunatha.

Immunology

1. Abraham, Roshini. **Regulation of immunogenicity and tolerance by antigen-presenting cells.** JNU. Dr Satyajit Rath and Dr Vineeta Bal.

2. Jaggi, Manu. **Study of peptide hormones regulating the growth of adenocarcinoma cells.** JNU. Dr Rama Mukherjee

Zoology

3. Danappa, Sanakal Rajeshwari. **Studies on viral components of the flacherie disease in bombyx mori L. from the Northern Districts of Karnataka.** Karnataka. Dr C J Savanurmath, Chairman, PG Department of Sericulture, Karnataka University, Dharwad.

4. Shaikh, Mohammad Ali. **Ecobiology of freshwater cilliates from Ahmednagar.** DBA Marathwada. Dr Masood Ahmed, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

5. Shorosimohan, D.N. **Biophysical studies on a nematode species strongyluris bengalensis with special reference to changes following laser radiation.** BR Ambedkar, Bihar. Dr P Sinha, Department of Zoology, B.R. Ambedkar University, Muzaffarpur.

6. Shukla, Abhishek. **Studies on population dynamic and control of okra shoot and fruit borer earias vittella fabricus with reference to some plant extracts.** Durgavati. Dr S C Pathak, Department of Botany, Rani Durgavati Vishwavidyalaya, Jabalpur.

7. Suryawanshi, Shivaji Narayanrao. **A study on the biology of a freshwater fish Puntius Kolus (Sykes).** DBA Marathwada. Dr S B Wagh, Department of Environmental Science, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

7. Umar Pasah, Inamdar S Bibi Jehanara Sayed. **Studies on the respective roles of some fat soluble vitamins in the developing chick muscles and liver.** Karnataka. Dr (Smt) A V Narasubhai, Department of Zoology, Karnataka University, Dharwad.

EARTH SYSTEM SCIENCES

Environmental Science

1. Bhaskaran, B. **Simulations of the Indian summer monsoon using a nested regional climate model.** IIT Delhi. Dr M Lal CAS, Indian Institute of Technology, Delhi.

Geochemistry

1. Reddy, L. Siddi Ram. **Geochemistry and petrogenesis of ultramafic rocks of central part of veligallu greenstone belt, Ananthapur-Cuddapah Districts, A.P. India.** Osmania. Professor K Suryaprakash Rao.

Geology

1. Prasada Rao, P. **Study on landsat imagery, hydrogeology hydrometerology, hydrogeochemistry of pennar delta system east coast of India.** Andhra. Dr K K V S Raju, Research Director, College of Science and Technology, Andhra University, Waltair.

ENGINEERING SCIENCES

Chemical Engineering

1. Koul, Virander Kumar. **Adsorption of sodium chloride and sodium sulphate on mixture of weakly acidic and weakly basic ion exchange resins equilibrium and kinetic studies.** IIT Delhi. Professor A K Gupta, Chemical Engineering Department, Indian Institute of Technology, Delhi.

Electrical Engineering

1. Kaushik, Saha. **Studies in analog VISI implementation of neural networks.** IIT Delhi. Professor S Prasad and Professor D Nagchoudhuri, Electrical Engineering Department, Indian Institute of Technology, Delhi.

Mechanical Engineering

1. Ramaswamy, M. **A study on mixtures of non-CFC referigerants alternative to CFC-12 for refrigeration systems.** IIT Delhi. Professor R S Agarwal and Dr V K Srivastava, Mechanical Engineering Department, Indian Institute of Technology, Delhi.

Technology

1. Giri, Chaitanya Charan. **Studies on development of a process for solvent deashing of coal to obtain environmentally clean fuels and characterization of products.** IIT Delhi. Dr D K Sharma, CES, Indian Institute of Technology, Delhi.

2. Jose, Laliamma. **Studies on latex compounding.** Cochin. Dr Rani Joseph, Reader, Department of Polymer Science and Technology, Kochi.

3. Verma, Shiv Kumar. **Rural sanitation and water supply : Action research for a water logged area.** IIT Delhi. Professor Padma Vasudevan, Centre for RD&T, Indian Institute of Technology, Delhi.

MATHEMATICAL SCIENCES

Statistics

1. Saharti, Vandana. **Some contribution to the study of redundant systems.** Ravishankar. Dr Gauri Shankar

MEDICAL SCIENCES

Medicine

1. Sundaraman, Velandai K. **A study of the functional changes in human skeletal muscle by imaging methodologies.** IIT Delhi. Professor S K Guha, CBME, Indian Institute of Technology, Delhi and Lt. Col. A Jena, Head, NMR Research Centre Institute of Nuclear Medicine and Allied Sciences, Lucknow Road, Delhi and Dr R K Srivastava, Head, Department of Rehabilitation, Safdarjang Hospital, New Delhi.

Neurophysiology

1. Lakshmana, M.K. **Effect of consumption of organo chlo-**

rine pesticide and herbicide during postnatal brain development on neurotransmitters and behaviour. NIMHANS. Dr T R Raju, Additional Professor and HOD of Neurophysiology, NIMHANS, Bangalore.

Pharmacy

1. Setty, Sri Siddamsetty *Ramachandra*. **Studies on the opioid and adrenergic mechanisms in Tween-20 induced anaphylactoid reaction in dogs.** Andhra. Professor D Visweswaram, Research Director, Department of Pharmaceutical Sciences, College of Engineering, Andhra University, Waltair.

2. Sharma, Surendra Kumar. **Phytochemical investigation on some medicinal plants of Kullu Valley Region (H.P.).** Jamia Hamdard Dr Mohammad Ali

PHYSICAL SCIENCES

Chemistry

1. Hota, Satya Prava. **Behaviour of Schiff base in organised assembly.** Sambalpur. Dr G B Behera, Professor, P.G. Department of Chemistry, Sambalpur University, Jyoti Vihar.

2 Jaiswal, Surendra Kumar **Synthesis and characterization of some mixed ligand nitrosyl complexes with N-and O-donars.** Durgavati. Dr S C Pathak, Department of Botany, Rani Durgavati Vishwavidyalaya, Jabalpur.

3 Kar, Sukhendu Kumar. **Investigation on co-ordination compounds containing multi dentate azodyes as ligands.** Sambalpur Dr B B Mohapatra, Lecturer in Chemistry, G.M College, Sambalpur

4 Sumi Reddy, K **Studies on metal complexes of keto acid hydrazones.** Kakatiya Dr S Sri Hari, Reader in Chemistry, Kakatiya University, Warangal.

5 Thakur, *Ramesh* **Study on coordination compounds with imne oxime as ligands.** BRA Bihar Dr S N Thakur, Department of Chemistry B.R A Bihar University, Muzaffarpur.

6 Vijayalakshmi, P **Effect of denaturants on the complex equilibria of some biologically important transition metal ions with L-arginine and L-valine A computer augmented modelling study.** Andhra Professor M S Prasada Rao, Research Director, Department of Inorganic and Analytical Chemistry, College of Science and Technology, Andhra University, Waltair.

Physics

1 Gupta, S. Surendra **Studies on the variation of rotation on the surface and in depth on the sun in relation to the photospheric magnetic fields.** Ravishankar Professor K R Sivaraman

2. Jaiswal, L.K. **Studies on the mechanoluminescence of copper doped zinc sulfo selenide phosphors.** Ghasidas. Dr M S K Khokhar

3 Roputray. **Studies in semi classical nuclear properties in the energy density formalism.** Sambalpur. Dr Basudeb Behera, Reader, P.G. Department of Physics, Sambalpur University, Jyoti Vihar.

4. Shrivastava, Mamta. **Studies on the pressure and temperature dependence of the kinetics and intensity of mechanolumenescence in irradiated alkali halide crystals.** Durgavati. Dr B P Chandra, Head, Department of Physics, Rani Durgavati Vishwavidyalaya, Jabalpur.

5. Singh, Jawahar Prasad. **Solvent effect on the spectra of isomeric dichloroanilines and isomeric dimethyl anilines.** BRA Bihar. Dr R N Singh, Professor of Physics, BRA Bihar University, Muzaffarpur.

PANJAB UNIVERSITY, CHANDIGARH

COMMON ENTRANCE TEST (C.E.T.) FOR ADMISSION TO B.E./B.ARCH./B.E. (CHEMICAL)/M.B.B.S./B.A.M.S./D.H.M.S./ B.PHARM./B.Sc. (HONOURS SCHOOL) COURSES, SESSION 1997-98

The University will hold a Common Entrance Test for the following Courses on Thursday, May 15, 1997.

1. ***Punjab Engineering College, Chandigarh***
   Bachelor of Engineering (Aeronautical, Civil, Computer Science and Engineering, Electrical, Electronics & Elect Communication, Mechanical, Metallurgical and Production)
2. **Chandigarh College of Architecture**
   Bachelor of Architecture
3. **Department of Chemical Engineering & Technology**
   Panjab University - B E (Chemical)
4. **Government Medical College, Chandigarh - M.B.B.S.**
   Only those candidates who have passed both 10 + 1 (11th Class) and 10+2 (12th Class) examination as regular students from recognised schools/ colleges situated *in the Union Territory of Chandigarh* with a minimum of 50% marks in the aggregate of Physics, Chemistry, Biology and English at 10+2 level However, in the case of members of the Scheduled Castes, relaxation of 10% marks shall be allowed.
5. ***Shri Dhanwantry Ayurvedic College, Chandigarh* - B.A.M.S.**
6. **Homeopathic Medical College, Chandigarh - D.H.M.S.**
   (The test is being held as authorised by the Chandigarh Administration)
7. ***University Institute/Teaching Departments***
   Offering the following Courses
   i) **University Institute of Pharmaceutical Sciences**
      B Pharmacy
   ii) **Teaching Departments**
      B.Sc (Hons School) in Anthropology, Biochemistry, Bio-Physics, Botany. Chemistry, Geology, Mathematics, Microbiology, Physics and Zoology

FOR DETAILED INFORMATION REGARDING MINIMUM QUALIFICATIONS/ ELIGIBILITY CONDITIONS/ RULES/ REGULATIONS/ INSTRUCTIONS/ PRESCRIBED FEE FOR THE COURSES/SUBJECTS/ COMBINATION OF SUBJECTS SYLLABI/ SAMPLE QUESTIONS ETC FOR THE ABOVE MENTIONED COURSES, (1-7), THE CANDIDATES ARE ADVISED TO CONSULT THE PROSPECTUS FOR C E.T - 1997

CENTRES FOR THE COMMON ENTRANCE TEST : CHANDIGARH, DELHI & LUDHIANA

Date-Sheet for the C.E.T.

Paper-I (Physics & Chemistry combined) - 9 00 a m to 11 00 a m
Paper-II Biology 11 30 a m to 12 30 p m
Paper-III Mathematics 2 00 p.m to 3 00 p m
Paper-IV Architecture Aptitude- 3 15 p m to 4 15 p m

Availability of Prospectus and Application Forms

The prospectus (including application form) will be made available for sale from Wednesday, Feb 26, 1997 and can be had, on payment, from any one of the following sources

i) The Cashier, Panjab University, Chandigarh on payment of Rs 120/- at the counter only
ii) The Librarian, Panjab University Extension Library, Civil Lines, Ludhiana on payment of Rs 120/- at the counter only
iii) The Manager, Publication Bureau, Panjab University, Chandigarh by Regd Book - Post on remitting Rs 140/-, only through Bank Draft drawn in favour of the **Registrar, Panjab University, Chandigarh (payable at Chandigarh)**. No request for supply of Prospectus including application form by post shall be entertained, if it is received in the University Office after Monday, March 17, 1997

The last date for receipt of application forms complete in all respects either by hand or by post in the office of Deputy Registrar, (Examinations) - CET Cell is Tuesday, March 25, 1997 (upto 5.00 p.m.). However, the application forms will also be accepted if submitted only personally on working days during the period 26-3-1997 (Wednesday) to 3-4-1997 (Thursday) with additional (late) fee of Rs. 500/-, per form.

NO APPLICATION FORM SHALL BE ACCEPTED UNDER ANY CIRCUMSTANCES AFTER 3-4-1997 (THURSDAY)

Sd/- (S. P. DHAWAN)
Controller of Examinations

Banaras Hindu University
Varanasi-221 005

NOTIFICATION FOR ENTRANCE TESTS - 1997

The University will hold Entrance Tests for Admission to the following Undergraduate Courses hereinafter called UET and Postgraduate Courses hereinafter called PET, Ph.D. (only in Agricultural Sciences) and Full Time Advanced Postgraduate Diploma Courses in June, 1997 for the session 1997-98 at various centres in the country. The Tests in respect of admission to B.P.E., B.F.A., B.Mus, all Postgraduate General as well as Professional Courses and Full Time Advanced Postgraduate Diploma Courses, except M.Sc. (Ag), Ph.D. (Ag) M.C.A. and M.B.A./M.I.B.A. *shall* be held at Varanasi only. The University reserves the right to cancel any of the centers except VARANASI.

UNDERGRADUATE COURSES OF STUDIES AND ELIGIBILITY CONDITIONS

1) ***3-Yr. B.A.(Hons)*** *in Faculties of Arts and Social Sciences* (male only) and Mahila Mahavidyalya (female only) Admission to B.A.(Hons) in the colleges of Arya Mahila Degree College, Vasant Kanya Mahavidyalya and Vasant College for Women also will be done through UET only **Eligibility:-** Applicants should have passed 10+2 OR equivalent examination with minimum of 45% marks in the aggregate Applicants born on *or after 1-7-1975 only are eligible to apply*

2) ***3-Yr. B.Sc.(Hons)*** in *Faculty of Science (both male & female)* and Mahila Mahavidyalay (female only) **Eligibility:-** Should have passed 10+2 OR equivalent examination with a minimum of 45% *marks in the aggregate* in science subjects under two streams

   (i) **Maths Group** Physics & Maths plus any one of the following: Chemistry, Statistics, Geology, Computer Science, Geography.

   (ii) **Bio-Group**. Physics & Chemistry plus any one of the *following Biology, Geology, Geography. Applicants born* on or after 1-7-1975 only are eligible to apply.

3) **3-Yr. B.Com (Hons) Eligibility**:- Should have passed 10+2 OR equivalent examinations with Commerce/Economics/ Maths *as a subject with a minimum of 45% marks in the* aggregate. Applicants born on or after 1-7-1975 only are eligible to apply

4) **3-Yr. Shastri (Hons) Eligibility** Should have passed *MADHYAMA* examination of BHU OR 10+2 with Sanskrit OR equivalent examination with a minimum of 45% marks in the aggregate

5) **1-Yr. B.J.; 1-Yr B.Lib. & Information Science. Eligibility:-** Should be a Graduate under at least 10+2+3 pattern with a *minimum of 50% marks in aggregate* OR Postgraduate Degree with a minimum of 50% marks in aggregate.

6) **3-Yr. B.P.E. Eligibility:-** Should have passed 10+2 OR equivalent examination with minimum of 45% marks in the aggregate Applicants born *on or after* 1-7-1975 only are eligible to apply.

7) **1-Yr. B.Ed. Eligibility:-** Should be a Graduate under 10+2+3 pattern with a minimum of 50% marks in the aggregate/Hons. (including *Shastri*, B.Mus. of BHU) OR M.A./M.Sc/M.Com. with a *minimum* of 50% in aggregate. (Candidates holding degree of Acharya/M.Sc.(Ag) are not eligible to apply.

8) **1-Yr. B.Ed. (Special). Eligibility:-** This course contains B.Ed. training as well as courses in *teaching of visually impaired children in integrated special schools. A stipend of* Rs. 300/- p.m. is given to 15 candidates only in order of merit. Should be a graduate under 10+2+3 pattern with a minimum of 50% marks in the aggregate/Hons. (including Shastri, B.Mus. of BHU or M.A./M.Sc./M.Com. with a minimum of 50% marks in aggregate. Candidates holding degree of Acharya/ M.Sc. (Ag.) are not eligible to apply).

   (Note :- Candidates are eligible to apply for one course only i.e. either B.Ed or B.Ed. (Spl.)

9) **3-Yr. LL.B. Eligibility:-** B.A./B.Sc./B.Com. (10+2+3 pattern) with a minimum of 45% marks in aggregate OR B.E./B Tech./ B.Sc.(Ag)/M.B.B.S OR any other degree/examination (10+2+3) recognised by Bar Council of India for admission to LL.B. Course.

10) **3-Yr. B.Mus. Eligibility:-** Passed 10+2 OR equivalent examination or a graduate/post-graduate degree with any of the following:-

    (i) Vocal/Instrumental Music as one of the subjects, (ii) Third year of 3-year Diploma in Vocal/Instrumental Music examination of this University OR equivalent examination, (iii) without offering Vocal/Instrumental Music as one of the subjects, provided the candidate has passed one of the examinations mentioned in the Information Bulletin

    Note: (1) It is mandatory for every candidate to have obtained minimum 50% marks in Music Practical in each case of requirement mentioned above. (2) Candidates admitted to B.Mus course *shall not be eligible* to *pursue simultaneously* any other course

11) **4-Yr. B.F.A. Eligibility** :- Should have passed 10+2 OR equivalent examination with a *minimum* of 45% marks in the aggregate. Applicants born on or after 1-7-1975 only are eligible to apply

12) **4-Yr B.Sc. (Ag) Eligibility:-** Should have passed 10+2 in Agriculture OR Science with Physics, Chemistry and Mathematics OR Biology OR any other equivalent examination recognised by the University with a minimum of 50% marks in the aggregate Applicants born on or after 1-7-1975 only are eligible to apply

POSTGRADUATE COURSES AND ELIGIBILITY CONDITIONS

13. **M.A.** In Arabic, Bengali, Hindi, Kannada, Marathi, Persian, Pali, Sanskrit**, Telugu, Urdu, Nepali, Ancient Indian History, Culture & Archaeology, History of Art, Philosophy, Geography, Indian Philosophy & Religion, Statistics, Mathematics Home Science *and* English. **Eligibility:-** B A *(Hons)**/B A* under 10+2+3 pattern with a minimum of 48% marks in aggregate including all subjects studied at B A level The subject in which admission *is sought must* be an *Hons subject at* B A (Hons) level/subject studied in all the three parts at B.A. level

14) **M.A.** in Linguistics. **Eligibility:-** As mentioned in item (13) above OR B.A.(Hons)*/B.A.* under 10+2+3 pattern and PG Diploma* in Linguistics *having* SIX or more papers in the subject with a minimum of 48% marks in aggregate both at B.A. and Diploma levels. OR B.A. (Hons)*/B.A.* under 10+2+3 pattern *followed by* M.A.* in any language subject (with a paper in linguistics) with minimum of 48% marks in aggregate both at B.A. and M.A. levels.

15) **M.A.** in Foreign Languages (German, French, Chinese) **Eligibility:-** As mentioned in item (13) above or B.A. (Hons)*/B.A.* under 10+2+3 pattern with PG Diploma* in the concerned foreign language with a minimum of 48% marks both at B.A. and Diploma levels.

16) **M.A.** in Indian Philosophy and Religion. **Eligibility:-** As men-

tioned in item (13) above OR Graduate Degree of any foreign University recognised by B.H.U. with PG Diploma in Indian Philosophy & Religion from B.H.U. or any other recognised university with a minimum of 48% marks both at the graduate and Diploma levels.

17) **M.A.** in History of Art. **Eligibility**:- As mentioned in item (13) above OR B.A. (Hons)*/B.A.* under 10+2+3 pattern and PG Diploma* in the concerned subject with 48% marks at both B.A. and Diploma levels.

18) **M.A.** in Economics, History, Political Science, Sociology and Psychology. **Eligibility**:- B.A.(Hons)*/B.A.* under 10+2+3 pattern with a minimum of 48% marks in aggregate including all subjects studied at B.A. level. The subject in which admission is sought must be an Hons. Subject at B.A (Hons) level/ subject studied in all the three parts at B.A. level.

19) **M.Sc.** in Physics, Chemistry, Botany, Zoology, Geology, Geography, Maths, Computer Science, Home Science, Statistics, Psychology. **Eligibility**- B.Sc.(Hons)*/B.Sc.* under 10+2+3 pattern with a minimum of 48% marks in aggregate at B.Sc. level. The subject in which admission is sought must be an Hons Subject at B Sc.(Hons) level/subject studied in all the three parts at B Sc level. However, for admission to M.Sc. *in Botany/Zoology a candidate must have Chemistry* as one of the subjects at the graduate level

20) **M.Sc.** in Biochemistry **Eligibility**:- B.Sc (Hons)/B Sc under 10+2+3 pattern with a minimum of 48% marks in aggregate with Chemistry as an Hons Subject at B Sc (Hons) level/as a subject studied in all the three parts of B Sc. level and any two of the subjects out of Biochemistry/Botany/Mathematics/ Physics/Physiology/Zoology Students with Biochemistry as one of the subjects at the graduate level and Chemistry as one of the subjects of study at graduate level shall also be eligible

21 **M.Sc.(Tech)** in Geophysics **Eligibility** - B Sc (Hons)*/ B Sc * *under 10+2+3 pattern with a minimum of 48% marks in aggregate* at B Sc level with Physics Mathematics and one more Science subject

22) **M.Com. Eligibility** - B Com (Hons)*/B Com * under 10+2+3 pattern with a minimum of 48% marks in aggregate

23) **ACHARYA** in Veda, Vyakaran, Jyotish, Mimansa, Vedanta Nyeyavaiseshika, Prachina Nyaya **Eligibility**.- Shastri (Hons) under 10+2+3 pattern, in the concerned subject with a minimum of 48% marks in aggregate.

24) **ACHARYA** in Sankhyayoga, Puranethasa and Sahitya **Eligibility** - As mentioned in item (22) above or B A (Hons)* with Sanskrit under 10+2+3 pattern with a minimum of 48% marks in aggregate

25) **ACHARYA** in Boudha Darshan **Eligibility** - As mentioned in item (22) above or B A.(Hons)* with Sanskrit/Pali under 10+2+3 pattern with a minimum of 48% marks in aggregate

26) **ACHARYA** in Jain Darshan **Eligibility** - As mentioned in item (22) above OR B A. (Hons)* with Sanskrit/Prakrita under 10+2+3 pattern with a minimum of 48% marks in aggregate

27) **ACHARYA** in *Dharmagama* **Eligibility**:- As mentioned in item (22) above OR Shastri (Hons)/B.A.(Hons)* with two years PG Diploma course in Agamtantra.

28) **1-Year M.J. Eligibility**.- B.J. of B.H.U. or equivalent degree with a minimum of 50% marks in aggregate after graduation under at least 10+2+3 pattern. OR B.J. Degree OR equivalent degree with a minimum of 50% marks in aggregate after a Postgraduate degree.

29) **2-Year M.P.E. Eligibility**:- B.P.E. (3-Year course) with a minimum of 50% marks in aggregate or Graduate degree of at least 10+2+3 pattern from a recognised University with one year Degree/Diploma in Physical Education with a minimum of 50% marks in aggregate OR 3-Year B.Sc. Degree in Physical Education, Health Education and Sports of B.H.U. with a minimum of 50% marks in aggregate. They shall be required to offer one additional paper in M.P E. course along with practice of teaching.

30) **1-year M.Lib. & Inf.Sc. Eligibility**- B.Lib & Inf.Sc. of B.H.U with a minimum of 50% marks in aggregate or equivalent degree.

31) **2-Year M.A.** Museology. **Eligibility**:- M.A. in History/A.I.H.C. & Arch./Sanskrit/History of Arts or any allied subject with a minimum of 50% marks in the aggregate.

32) **2-Year LL.M. Eligibility**.- 3-Year LL.B. after graduation under 10+2+3 pattern or five years LL.B. under 10+2+5 pattern recognised by the Bar Council of India with a minimum of 50% marks in aggregate.

33) **1-Year M.Ed. Eligibility**.- Graduate under 10+2+3 pattern and B.Ed./B.Ed. (Spl) with a minimum of 50% marks in theory OR Any Postgraduate degree with a minimum of 50% marks in aggregate of theory in B.Ed/B.Ed (Spl.).

34) 2-Year M.F.A. in Painting, Applied Arts, Plastic Arts, Pottery & Ceramics, Textile Design. **Eligibility**:- Should have passed B F A in the subject concerned (10+2+4 pattern or 10+5 pattern) with a minimum of 50% marks in aggregate.

35) **2-Year M.Mus.** in Vocal, Instrumental Music. **Eligibility**.- B Mus in Vocal/Instrumental Music or B.A. (Hons) under 10+2+3 pattern with music from B.H U. or an equivalent examination from a recognised University with a minimum of 50% marks in practical. OR Bachelors degree (10+2+3) pattern of B H,U without music or an equivalent examination from a recognised University provided the candidate has also passed one of the examinations with a minimum of 50% marks in practical as mentioned in the Information Bulletin.

36) **M.Sc. (Ag.)** in Agricultural Economics, Agronomy, Animal Husbandry and Dairy Sciences, Entomology & Agricultural Zoology, Extension Education, Genetics and Plant Breeding, Horticulture, Mycology and Plant Pathology, Plant Physiology and Soil Science & Agricultural Chemistry **Eligibility** - (a) Passed the Four Year B Sc (Ag) Examination of this University or an equivalent examination recognised by this University. (b) The requirement of Four years course shall not be *applicable to such candidates as have passed* the B Sc. (Ag.) examination in 1992 or earlier, (c) Obtained at least 50% marks in aggregate under the traditional system or an O G.P.A. of 2.5/4, 3.5/5, 4.0/6, 6 5/10 under the course credit system and should not have secured more than one Third Division in his/her academic career

37) **3-Year M.C.A. Eligibility**:- Bachelor's degree under 10+2+3 pattern in any discipline with at least a minimum of 50% marks in aggregate. The candidate must have passed Intermediate+2(10+2) or equivalent examination with Mathematics as a subject.

38) **2-Yr MBA/MIBA. Eligibility** - A graduate degree under 10+2+3 pattern OR A degree in Agriculture, Technology, Medicine, Education or Law OR A Post-graduate degree in any discipline. OR A pass degree plus one year link course or any other equivalent course. The candidate must have secured a minimum of 45% marks at the qualifying examination

39) **Full time Advanced Diploma in** (i) Archaeology, (ii) Numismatics. **Eligibility**:- M.A. in A.I.H.C & Arch./M.A. in A.I.H C

40) **Full time Advanced Diploma** in (i) Indian History and Culture, (ii) History of Art. **Eligibility**:- Graduate Degree of B H U OR equivalent Degree under 10+2+3 pattern of any other University. Relaxable in case of foreign students.

41) **Full time 2 year Postgraduate Diploma** in Hindi Journalism **Eligibility**:- M.A. in any subject or equivalent degree. Must have studied Hindi at +2 level.

42) **Full time Advanced 2-Year Diploma** in Agama-Tantra. **Eligibility**:- Graduate degree with Philosophy, Religion, Sanskrit, History & Culture of this University OR an equivalent degree.

43) **Ph.D.(Ag.)** in Agricultural Economics, Agronomy, Animal Husbandry and Dairy Science, Entomology & Agricultural Zoology, Extension Education, Genetics and Plant Breeding, Horticulture, Mycology and Plant Pathology, Plant Physiology and Soil Science & Agricultural Chemistry. **Eligibility:-** *Should* have passed M.Sc. (Ag.)/M.Sc. in the subject or an equivalent examination. Obtained at least 50% marks in aggregate under the traditional system or an O.G.P.A. of 2.5/4, 3.5/5, 4.5/6, 7/10 under the course credit system and should not have secured more than one Third Division in his/her academic career.

* Or an equivalent examination recognised by the Banaras Hindu University.

** Shastri (Hons) shall be eligible for admission to M.A. Sanskrit.

Note : Notwithstanding anything contained in the prospectus of studies regarding the course in which admission is made through Entrance Test the only eligible requirement for the purpose of admission shall be those which are mentioned above or given in the Information Bulletin of the academic session concerned.

ONLY PASS MARKS ARE REQUIRED IN THE CASE OF SC/ST CANDIDATES.

RESERVATION (for all courses): 15% and 7.5% seats are *reserved for SC/ST candidates respectively and 3% seats are reserved for Orthopaedically handicapped candidates* provided they qualify in the Test. There is no reservation of seats *for Orthopaedically handicapped candidates* in B.Sc (Ag), M.Sc (Ag.) Ph.D.(Ag.), 3-year B.P.E. and M.P.E. Courses

CENTRES FOR TESTS :

1. **Undergraduate Courses**: (a) All courses (except B.Sc. (Ag.), B.F.A. B.Mus. and B.P.E.) — CALCUTTA, DELHI LUCKNOW, and VARANASI. (b) B.Sc.(Ag.) — CHENNAI, DELHI, KANPUR and VARANASI (c) B.F.A. B.Mus & B.P.E. — VARANASI only
2. **Postgraduate Courses**: (a) All courses including PG diploma courses (except M.C.A., M.Sc (Ag.), Ph.D (Ag.) and MBA/MIBA)-Varanasi only (b) M.Sc (Ag), and Ph.D (Ag.) - CHENNAI, DELHI, KANPUR AND VARANASI (c) M.C.A. and MBA/MIBA — CALCUTTA, DELHI, HYDERABAD and VARANASI

THE UNIVERSITY RESERVES THE RIGHT TO CANCEL ANY OF THE CENTRES EXCEPT VARANASI. FOR MORE DETAILS PLEASE REFER TO THE INFORMATION BULLETIN.

COST OF APPLICATION FORM INCLUDING INFORMATION BULLETIN AND TEST FEE:

Undergraduate Courses: (a) B.A.(Hons.), B.Sc.(Hons.), B.Com. (Hons.), B.Ed., B.Ed.(Special), B.J., B.lib. & Inf. Sc., B.P.E., LL.B., B.Mus., B.F.A., B.Sc.(Ag.) — Rs. 200/- for general candidates and Rs. 60/- for SC/ST candidates (b) Shastri(Hons) — Rs.100/- for general candidates and Rs. 60/- for SC/ST candidates. *Postgraduate Courses.* (a) M.A., M.Sc., M.Sc.(Tech), M.Com., LL.M., M.J. M.Lib. & Inf.Sc., M.P.E., M.Mus., M.F.A., M.Ed., M.A. (Museology), M.Sc.(Ag.), Ph.D.(Ag.), PG Diploma Course — Rs. 250/- for general candidates, Rs. 125/- for BHU students and Rs. 75/- for SC/ST candidates (b) Acharya — Rs. 200/- for general candidates, Rs.100/- for BHU students and Rs. 75/- for SC/ST candidates. (c) M.C.A. and MBA/MIBA — Rs. 300/- for general candidates and Rs.150/- for SC/ST candidates.

APPLICATION FORMS AT THE PRICES MENTIONED ABOVE SHALL BE MADE AVAILABLE TO SUCH BHU STUDENTS WHO HAVE BEEN ADMITTED THROUGH UET (BHU) AND HAVE PASSED THEIR QUALIFYING EXAMINATION FROM THE INSTITUTE/FACULTY/M.M.V., BANARAS HINDU UNIVERSITY, IN THE YEAR OF THE TEST OR ONE YEAR IMMEDIATELY PRECEDING THE TEST. ONLY THOSE STUDENTS OPTING FOR ADMISSION TO AFORESAID PROFESSIONAL COURSES AND HAVING PASSED THEIR MASTER'S DEGREE IN THE YEAR 1996/ APPEARING DURING THE CURRENT SESSION ARE ALSO ENTITLED TO AVAIL CONCESSION AS BHU STUDENT.

Those desirous of obtaining the form by Post **must add Rs. 20/-** to the cost mentioned above in the demand draft.

The application forms are available from the office of the Controller of Examination (Counters in Multipurpose Hall) for sale from February 13, 1997, between 10.30 am and 2.00 pm on all working days. For obtaining application form by **REGISTERED POST** please send a self addressed UNSTAMPED envelope of *size 31.5x26.5 cm indicating on it the course for which the form is* required, to the CONTROLLER OF EXAMINATION, along with a STATE BANK OF INDIA Demand Draft of the requisite amount as indicated above drawn in favour of CONTROLLER OF EXAMINATIONS, BANARAS HINDU UNIVERSITY and payable at STATE BANK OF INDIA, BHU BRANCH. (Code No 0211) **(Add Rs. 20/- for postal charges).**

Applications form duly completed and accompanied by all relevant mark-sheets, certificates, caste certificates (where needed), are to be sent to CONTROLLER OF EXAMINATIONS BANARAS HINDU UNIVERSITY VARANASI-221 005 *so as to reach his office* **ON OR BEFORE MONDAY, 29th MARCH 1997.**

Candidates appearing in their respective qualifying examinations prescribed for admission to a particular course are also eligible to apply in the ENTRANCE TESTS as per conditions laid down in this regard and mentioned in the Bulletin. **CANDIDATES ARE REQUIRED TO APPLY IN SEPARATE FORM FOR EACH COURSE.**

APPLICATION FORMS RECEIVED AFTER LAST DATE SHALL NOT BE ACCEPTED. THE UNIVERSITY TAKES NO RESPONSIBILITY FOR ANY DELAY OR LOSS OF APPLICATION FORM OR CORRESPONDENCE IN POSTAL TRANSIT

RESERVATION IN PG COURSES:

50% of the total seats shall be reserved for BHU students as defined earlier for admission to postgraduate courses **except MCA, MBA, MIBA (where AICTE guidelines are to be followed)** and Ph.D. (Ag.) subject to their appearance and fulfilling the minimum eligibility conditions

FOREIGN NATIONALS

5% of the quota of seats on supernumerary basis in each course will be reserved for such foreign nationals nominated by the Govt of India under scholarship schemes and also self financing foreign nationals for General Courses. They will not be subject to any admission Test provided they have passed the equivalent qualifying examinations from a country outside India. Their applications should be routed through the Ministry of Human Resource Development (Department of Education), Government of India, New Delhi. Tuition and other fees to be payable by self-financing foreign nationals shall be in foreign currency as may be determined by the University.

IMPORTANT DATES :

Commencement Date of issue of application forms from Counter :	**13-2-1997**
Last date for receipt of requisition for sending the application form by post	**3-3-1997.**
Last date for sale and receipt of duly completed application forms both by hand and by post	**29-3-1997**
Last date for receipt of duly completed application forms with **LATE FEE of Rs 100/-** *payable by crossed demand draft/Bankers cheque:*	**2-4-1997**

REGISTRAR

CLASSIFIED ADVERTISEMENTS

SALIM ALI CENTRE FOR ORNITHOLOGY AND NATURAL HISTORY

(AN AUTONOMOUS CENTRE AIDED BY THE GOVERNMENT OF INDIA)

Requires

SENIOR ADMINISTRATIVE OFFICER : Scale of Pay: *Rs.3000-100-3500-150-4500*; **starting** emoluments Rs. 9145/- for direct recruit; for deputationist from Govt./Govt. Undertaking as per Govt. of India rules. **Maximum Age as on 01.01.97**: 35 years for direct recruit; 56 *years for deputationist*. **Qualification**: Post Graduate. **Experience**: 5 years in relevant area in a Department/Undertaking *of Central/State Govt. or reputable Private* Undertaking/Voluntary Organization. Applications should be in the prescribed *format available from* Director, Salim Ali Centre for Ornithology and Natural History, Kalampalayam PO, Coimbatore-641 010. *Requests to be* accompanied by self addressed, stamped envelope. Last date of receipt of duly filled in *applications 15 March 1997*.

DIRECTOR

JAI NARAIN VYAS UNIVERSITY, JODHPUR

(Establishment Section)

Advertisement No. 96/96-97

Applications are invited for the following posts so as to reach this office **on or before 17th March, 1997**

1. **Professors** (Rs. 4500-150-5700-200-7300)

   a) Unreserved (One Each) :-

   Economics, Geography, Hindi, History, Home Science(P), Philosophy, Political Science, Psychology, Rajasthani(P), Sociology(Medical Sociology), Law, Accounting(P), Business Administration (P), Mathematics, Zoology, Civil Engineering, Electrical Engineering (Power System/High Voltage/Instrumentation/Power Electronics/Machines), Computer Science & Engineering (MCA) (P), Mechanical (Thermal), Mining Engineering (P) (Coal Mining), Structural Engineering (P), Electronics and Communication Engg. (Digital Communication Engg.), Management Studies, Physics, Chemistry (P).

   b) *Reserved SC (One Each)* :-

   Sociology (P), Law (P), Accounting, Electrical Engg., Mechanical Engineering.

2. **Associate Professors (Readers)** (Rs. 3700-125-4950-5700)

   a) Unreserved (Two Each) :-

   English, Hindi, Physics, Structural Engineering.

   (One Each) :-

   Economics (P), History, Political Science, Music (P), Law (P), Accounting, Botany (P), Chemistry (Physical), Mathematics, Business Finance & Economics, Zoology, Civil Engineering, Electronics & Communication Engg., (Consumer Electronics and T.V. Technology), Computer Science & Engineering (MCA) (P), Mining Engg., Mechanical Engineering.

   b) Reserved SC (One Each) :-

   English, Economics, Hindi, Accounting, Business Finance & Economics, Physics, Mathematics, Zoology, Civil Engg., Electronics & Communication Engg., Computer Science & Engg. (MCA) (P), Mining Engg., Structural Engineering, Mechanical Engineering

   c) Reserved ST (One Each) :-

   English, Hindi, Physics, Chemistry, *Structural* Engg.

3. Assistant Professors (Rs. 2200-75-2800-100-4000)

   a) Unreserved

   Computer Science & Engg. (4), Physics, Chemistry (Three each), Mathematics (Two), Economics, Fine Arts & Painting, Home Science, Music, Sociology, Social Studies, Law, Business Finance & Economics, Electrical Engineering, Mechanical Engg., Production & Industrial Engineering (One each).

   b) Reserved SC : (One each)

   Fine Arts & Painting, Home Science, Social Studies, Physics, Chemistry, Mathematics, Electrical Engg., Mechanical Engg., Computer Science & Engineering, Production & Industrial Engineering.

   c) Reserved ST . (One each)

   Law, Physics, Chemistry, Mathematics, Computer Science & Engineering.

   d) Reserved OBC :

   Physics, Chemistry one each and Computer Science & Engineering (Two)

4. Director, Academic Staff College (UGC Plan) -One (Rs. 4500-7300).
5. Dy. Director, Academic Staff College (UGC Plan)-One (Rs. 3700-5700).
6. Asst. Director, Academic, Academic Staff College (UGC Plan)-One (Rs. 2200-4000).
7. Director, Physical Education-One (Rs. 2200-4000).
8. Librarian - One (Rs .4500-7300).
9. Training and Placement Officer - One (Rs. 3700-5700).

Reservation of posts for SC/ST/OBC has been provided as per roster prescribed by the State Government and in the light of the Supreme Court Judgment. The reservation of SC/ST/OBC has not been provided more than 50% of the vacancies. Single post and single vacancy has also been shown under general category. Candidates belonging to SC/ST/OBC may also apply against the unreserved posts.

P - Means UGC/State Plan and Temporary posts which is likely to be continued.

Application forms with details of qualification etc. can be obtained by post on payment of Rs. 10/- (Bank Draft/I.P.O in favour of the Registrar of this University alongwith self addressed envelope of size 27x12 cm. affixing stamps worth Rs. 12/- to cover the postal charges. Applications incomplete and/or received after due date will not be entertained. University reserves the right to alter the number of posts or not to fill up the posts.

Candidates who have applied earlier in response to Advertisement No.102/93-94 dated 9.10.93 (for the posts other than Asst. Professor in the Faculties of Arts, Law and Deptts. of Electronics and Communication Engineering) and Advertisement No.7/95-96 dated 24.4.95 (for the posts of Professors and Associate Professors (Reader) and others except Assistant Professor (Lecturer) need not apply again and they must send an application on plain paper to consider their previous application alongwith any change of address for communication and updating information otherwise their application will not be considered.

REGISTRAR

INDIAN SCHOOL OF MINES,

DHANBAD - 826004

(Advert. No. 420001/97-Estt)

SPECIAL RECRUITMENT DRIVE FOR SC/ST CANDIDATES - 1997.

Invites application for the following Faculty/Administrative positions exclusively from SC/ST candidates.

1. **Lecturer** (Scale of Pay Rs. 2200-4000/-)

   a) Geophysics (Geophysical Instrumentation) SC

   b) Petroleum Engineering (Petroleum Engg.) SC

c) *Mining Machinery (Electrical/Mechanical Engg.)* SC/ST

d) *Mining Engineering (Blasting/Coal Mining/Mine Surveying/ Mine Ventilation)* SC

e) Fuel & Mineral Engineering (Mineral Processing/Fuel Technology) SC/ST

2. **Assistant Registrar** (Scale of Pay: *2200-4000/-*) (Accounts/Establishment) ST.

Qualification and Experience for all posts as per UGC/AICTE norms.

The posts also carry allowances, medical, LTC and GPF Cum-Pension benefit as are applicable to Indian School of Mines as a deemed University.

Full details regarding the qualifications, age etc. and prescribed application may be obtained from the office of the Deputy Registrar (Estt.), Indian School of Mines, Dhanbad 826004 by sending a crossed demand draft of Rs. 10/- (Rupees ten only) in favour of Registrar, Indian School of Mines, Dhanbad alongwith a self addressed stamped (Rs. 10/-) envelope of size 30cm x 12cm. Last date of issue of blank form is 21.3.97. Last date for receiving application with relevant enclosures in the office of the Registrar, Indian School of Mines, Dhanbad 826004 is **31.3.97**. Candidates from abroad will be restricted within *the jurisdiction of Dhanbad only*

B L Jha
REGISTRAR

CENTRAL INSTITUTE OF FISHERIES EDUCATION (I.C.A.R.)

VERSOVA, MUMBAI-400 061.

Applications are invited on plain paper for the award of two Sr. Research Fellowship to carry out the work on "Standardization of techniques of *multiple carp* spawning and seed production on commercial basis in semi-arid eco-region" at the Saline Ecosystem Aquaculture Research Centre of CIFE, Rohtak (Haryana) with the following conditions :-

1) Sr. Research Fellowships .. Two Fellowship @ Rs. 2500/- per month

Duration .. 3 years or till the validity of the project.

Educational Qualification : M.Sc (FM/IFAM), M.F.Sc /M.Sc. (Zoology with Fisheries specialisation)/ D.F.Sc.

Age .. Below 45 years.

(N.B. : The fellows are eligible for registration for Ph.D. of any other University, if they so desire).

The applications should reach the Sr. AO/Registrar, Central Institute of Fisheries Education (ICAR), (Deemed University), J.P. Road, Seven Bungalows, Versova, Andheri (West), Mumbai-400 061 **within 15 days** of the release of the advertisement.

JAMIA MILLIA ISLAMIA

(A CENTRAL UNIVERSITY)

Advt.No. 7/1996-97

Applications on the prescribed form are invited for the following posts so as to reach in the **Office of the Asst Registrar (Recruitment)**, *Jamia Millia Islamia latest by* **14.03.1997.**

Sl. No.	Post and Scale	No. of Post	Subject/Department
1.	Professor (Rs. 4500-7300)	01	Hindi
2.	University Librarian (Rs. 4500-7300)	01	Dr. Zakir Husain Library.
3.	Readers (Rs. 3700-5700)	03	One each in Computer Sc., Economics and Art & Craft.
4.	Dy. Director (Rs. 3700-5700) (Temp. likely to be made permanent)	01	Management Development & Training Programme
5.*	Lecturers (Rs. 2200-4000)	05	One each in Computer Sc., Bio-Sc, Inorganic Chem., Hindi & Civil Engg. (Polytechnic)
6.	Instructors (Rs.1640-2900)	02	One each in Urdu and English, Deptt. of Fine Arts.
7.	P.G.T.s (Rs.1640-2900)	03	Two in Physics (one temporary) & one in Pol. Sc.
8.	T.G.T.s (Rs.1400-2600)	04	One each in English, Agriculture, Hindi & Eco. and Hindi & Hindu Ethics.
9.	Craft Teacher (Rs.1200-2040)	01	Cutting & Tailoring/B M.C.
10.	Primary Teachers (Rs.1200-2040) (Temporary)	02	Middle School
11.	Nursery Teachers (Rs.1200-2040) (one temporary)	02	Nursery School/Balak Mata Centre
12	Library Incharge (Rs.1400-2600) (Leave vacancy)	01	Middle School
13.	Semi Prof. Assts. (Rs.1400-2300) (two temporary)	04	Dr Zakir Husain Library
14	Junior Engineers/Store Keeper (Rs.1400-2300) (temp. likely to be made permanent)	03	Two in Civil & One in Electrical Engg.
15.	Sr Lab. Asstts (Rs.1400-2300)	02	One each in Bio-Scs. & Geography
16	Technical Asstt (Rs.1400-2300)	02	One each in Physics and Chemistry, Applied Science & Humanities Section, Faculty of Engineering
17	Lab. Asstts (Rs 1200-2040)	02	One each in Chemistry & Biology/ Sr Sec. School.
18.	Stenographers (Rs.1200-2040)	10	
19	Governess (Rs.800-1150)	02	Jamia Nursery School

***Desirable-Lecturer Bio-Scs.**: Research work in the area of Microbiology/Molecular Biology/Modern field of Animal Sciences.

Note :

1. Reservation exists. 15% for SC, 7.5% for ST and 27% for OBC candidates as per rule.
2. *Knowledge of Urdu is a desirable qualification for all non-teaching posts.*
3. *Relaxation in any of the qualifications may be made on the recommendation of the Selection Committee in exceptional cases.*
4. The number of vacancies may increase/decrease at the time of Selection Committee meeting.
5. Candidates who have applied for the posts of University Librarian in response to our earlier advertisement dated 07-06-96, Reader and Lecturer in Computer Science dated 02-08-96, P.G.T. Political Science, Nursery Teacher, Lab. Assistants in Sr. Sec. School and Governess dated 12-08-93, Instructor in Urdu and English in Fine Arts dated 03-01-91 need not apply again. They may, however, furnish additional information, if any, by the last date mentioned above

The prescribed application forms together with the detailed information/ qualification can be had from the Recruitment Cell, Registrar's Office, Jamia Millia Islamia, New Delhi-110 025 during working days either personally from 10:00 a.m to 01:00 p.m. or by sending a self addressed stamped envelope worth Rs. 3/- (Ordinary Post) and Rs. 10/- (Registered Post) with the payment of Rs. 50/- (Rs. 20/- for SC/ ST) and only Rs. 25/- (Rs. 10/- for SC/ST) for post of Governess. The amount should be paid through **IPO/DD/Cash on counter**, which shall be non refundable, drawn in favour of Jamia Millia Islamia.

Hasib Ahmad
REGISTRAR

Dated : 17-02-1997

RESEARCH FOR LIFE

RANBAXY
RESEARCH
AWARDS
'96

HELP US RECOGNISE YOUR OUTSTANDING RESEARCH SCIENTISTS

We invite Heads of research institutions, universities, medical and pharmaceutical colleges, to send in their nominations for the **Ranbaxy Research Awards-1996**. The awards are for excellence in original research work in Medical and Pharmaceutical Sciences by Indian scientists. From this year onwards, Non-Resident Indian Scientists are also eligible for these awards.

The 1996-Awards

This year, four awards will be given. Each award will carry a trophy, citation and cash award of Rs. 50,000.

- **MEDICAL SCIENCES** - Three awards.

- One each for Basic Research, Applied Research and Clinical Research

- **PHARMACEUTICAL SCIENCES** - One award.

The Procedure

You are requested to send the nominations of research scientists who have done original research work. This nomination should comprise 12 bound sets, each consisting of the following information:

- Complete bio-data.
- List of 10 best papers of the candidate.
- Awards already received.
- **Signed** details of the excellence in research work for which the nomination is being sent.
- **Two** specific publications/research papers relevant to the research work.
- Statement that the research work under reference has not been given any award.
- **Signed** consent of the candidate.
- Justification for sponsoring the nomination, and
- Citation on outstanding research work by the nominator.

All nominations should be forwarded to reach by April 15, 1997 at the address given below.

Dr. O.P. Sood
Member — Governing Council
Ranbaxy Science Foundation
20, Sector 18, Udyog Vihar Industrial Area,
GURGAON - 122001 (HARYANA)-INDIA

UNIVERSITY NEWS, 35(8), FEBRUARY 24, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL-11106/97

BHARATI VIDYAPEETH

DEEMED UNIVERSITY, PUNE

ALL INDIA COMMON ENTRANCE TEST - 1997 (CET-1997)

FOR ADMISSION TO MBBS/BDS/BAMS/BHMS COURSES

Applications are invited from eligible candidates for All India Common Entrance Test scheduled to be held on **15 th June 1997, at PUNE, NAVI MUMBAI, HYDERABAD AND DELHI** for admission to the following degree courses

★ Bachelor of Medicine and Bachelor of Surgery (MBBS)
★ Bachelor of Dental Surgery (BDS)
★ Bachelor of Ayurvedic Medicine and Surgery (BAMS)
★ Bachelor of Homoeopathic Medicine and Surgery (BHMS)

ELIGIBILITY : Candidate must satisfy the following requirements

1 Should be an Indian National born on or before 1st Jan 1981

2 *Should have Passed any one of the qualifying examination such as H.S.C. I.S.C.E. P.U.C. of Recognised Board Indian University or any examination equivalent to 10+2 (Higher Senior Secondary) Examination after twelve years of* study from Institution situated in India

3 Should have passed the qualifying examination at one and the same attempt

4 For admission to MBBS/BDS candidate should have secured not less than 50% marks in Physics Chemistry Biology and English taken together and for admission to BAMS BHMS candidate should have secured not less than *50% marks in Physics Chemistry Biology taken together and should have passed in English subject*

Note :- Candidates who are likely to appear have appeared for 10+2 examination or equivalent qualifying examinations with above mentioned subjects are also eligible to apply

PROCEDURE FOR ADMISSION

Candidates will be selected for admission in accordance of merit obtained in the CET - 1997

15% of the seats of each course are reserved for N.R.I. Foreign students. If there remain any vacant seats in this quota the same will be filled in by Management on their own as per the Supreme Court decision (This provision is subject to present and future decisions of the Supreme Court in this regard)

Application Forms and Information Brochure are available across the counter on payment of Rs 350 in cash at

1 Bharati Vidyapeeth Deemed University
Bharati Vidyapeeth Bhavan Lal Bahadur Shastri Marg
Pune-411 030.
(CET - Cell Contact Tel No 0212 421317)

2 Bharati Vidyapeeth Deemed University
Medical College Katraj-Dhankawadi **Pune 411 043.**
(CET - Cell Contact Tel No 0212 448144)

3 Bharati Vidyapeeth's College of Engineering
Sector 7 C.B.D. Belapada **Navi Mumbai 400 614.**
(CET - Cell Contact Tel No 022 7571074)

4 Bharati Vidyapeeth's Institute of Management and Research
A-Block Rohtak Road Opp ordance Depot National Highway 10 Paschim Vihar Extension **New Delhi 110 010.**
(CET - Cell Contact Tel No 011 5510320 5684396

INFORMATION BROCHURE AND APPLICATION FORM CAN ALSO BE OBTAINED FROM THE UNDERSIGNED BY POST BY SENDING A REQUEST APPLICATION WITH DETAILED ADDRESS FOR CORRESPONDENCE AND **DEMAND DRAFT OF Rs.365/-** (NON REFUNDABLE) PAYABLE AT PUNE DRAWN IN THE NAME OF BHARATI VIDYAPEETH *DEEMED UNIVERSITY THE APPLICATION COMPLETE IN ALL RESPECTS SHOULD REACH THE UNDERSIGNED* ALONG WITH **DEMAND DRAFT OF RS.750/-** (NON REFUNDABLE) PAYABLE AT PUNE DRAWN IN THE NAME OF BHARATI VIDYAPEETH DEEMED UNIVERSITY AS ENTRANCE TEST FEE ON OR BEFORE **24TH MAY 1997 BY 1700 hrs. AND ON OR BEFORE 31st MAY 1997 BY 1700 hrs. WITH AN ADDITIONAL LATE FEE OF RS.100/-.**

N.B.:For admissions to B.Sc.(Nursing) please contact the undersigned

REGISTRAR
BHARATI VIDYAPEETH DEEMED UNIVERSITY
BHARATI VIDYAPEETH BHAVAN, LAL BAHADUR SHASTRI MARG, PUNE-411 030

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University News

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Shreesh Chaudhary

English Lexicography and Database English Dictionaries
— Which Dictionary Should I Buy?

R.P. Bhatnagar

Re-engineering Higher Education

N. Gopalakrishna

Communication Centres in Health Universities

TNAU Medicinal Park

Reservations for Women

Agricultural Research Awards

ICAR-ODA Research Programmes

Association of Indian Universities

JAWAHARLAL NEHRU UNIVERSITY

ADMISSION ANNOUNCEMENT 1997-98

The University will hold Entrance Examination on May 17, 18, 19, 1997 for admission to various full-time programmes of study at the following 35 cities.
Ahmedabad, Aurangabad, Bagdogra, Bangalore, Baroda, Bhubaneshwar, Calcutta, Chandigarh, Chennai, Danapur Cantt(Bihar), Dehradun, Delhi, Dharwad, Gauhati, Gwalior, Hissar, Hyderabad, Imphal, Indore, Jaipur, Jammu, Jodhpur, Kochi, *Lucknow, Madurai, Mumbai*, Patna, Pune, Ranchi Sambalpur, Secundrabad (AP), Shillong, Thiruvananthapuram, Varanasi and Vijayawada (The University reserves the right to *change centre of examination without assigning any reasons*)

SCHOOL AND PROGRAMMES OF STUDY

1. SCHOOL OF INTERNATIONAL STUDIES

(i) M.Phil/Ph.D. in International Politics, Organisation, Disarmament & Political Geography, Diplomatic Studies International Legal Studies, International Trade & Development, South Asian, Central Asian, Southeast Asian & Southwest Pacific Studies, Chinese, Japanese and Korean Studies, West Asian, North *African and Sub-Saharan African Studies*, American, Latin American & West European Studies and Soviet & East European Studies **(ii) M.A** in Politics (with specialization in International Relations) **(iii) M.A.** *in Economics (with specialization in World* Economy)

II. SCHOOL OF LANGUAGES

(i) M.Phil/Ph.D. in, French, German Modern Arabic, Russian Hindi, English, Linguistics including Semiotics, Spanish and Urdu and **Ph.D.** in Japanese, Chinese, Persian and Modern Western Philosophy **(ii) M.A.** in English, Linguistics, Hindi Urdu, Persian Arabic, Chinese, Japanese, French German, Russian and Spanish, ***(iii) B.A.(Honours)*** *in Persian Modern Arabic Chinese* Japanese, Korean French, German Russian and Spanish (with entry points both in 1st and 2nd year)

III. SCHOOL OF SOCIAL SCIENCES

(i) M.Phil/Ph.D. programme is offered by following Centres have their curricular and research work organised on interdisciplinary basis with a focus on some major problems of study Centres Economic Studies and Planning, Historical Studies, Political Studies, *Regional Development*, (Geography Economics Population Studies), Social Systems (Sociology), Educational Studies (Psychology, Sociology, Economics and History of Education), *and Social Medicine & Community Health*

(ii) Master of Community Health (MCH/Ph.D.) For candidates holding MBBS with one year's experience after internship or *Master's degree in Nursing with one year's experience in Com*munity Health in Nursing, **(iii) M.A.** in Economics Geography History, Political Science & Sociology

IV. SCHOOL OF LIFE SCIENCES

Both the Doctoral and Master's Programmes in Life Sciences are open to candidates majoring in *Biological* and *Physical* Sciences. **(i) M.Phil/Ph.D.** in areas of interdisciplinary research, Genetic Engineering, Molecular Biology and Genetics, Biochemistry, *Plant and Animal Tissue Culture, Developmental Biology*, Cell Biology, Immunology Neurobiology, Microbiology, Radiation and Cancer Biology, Biophysics Photobiology, Bioenergetics, *Membrane-Biology etc* ***(ii) M.Sc.*** *in Life Sciences* An integrated disciplinary Programme in Modern Biology

V. SCHOOL OF ENVIRONMENTAL SCIENCES

(i) M.Phil/Ph.D. in *Inter-disciplinary areas of Environmental* Sciences including Biology and Allied fields, Chemistry, Geology and Physics **(ii) M.Sc.** in Environmental Sciences. An interdisciplinary course with Physical, Biological, Earth Sciences and Pollution Studies

VI. SCHOOL OF COMPUTER & SYSTEMS SCIENCES

(i) M.Phil/Ph.D. & M.Tech./Ph.D. The School offers academic programmes leading to the award of Degrees in diversified areas of Computer Science & Technology,

(ii) Master of Computer Applications (MCA) *3-year programme* open to candidates with adequate competence in Mathematics

VII. SCHOOL OF PHYSICAL SCIENCES

(i) **Ph.D.** in Physical Sciences (Pure Physics and interface of Physics and Chemistry) The emphasis is on topics of Chemical Physics, Computational Physics Condensed Matter Physics Disordered Systems, Mathematical Physics Nonequilibrium Statistical Mechanics Nonlinear Dynamics Quantum Chaos, Quantum Field Theory and Particle Physics Quantum Optics and Statistical Nuclear Physics Experimental areas include Complex Fluids, Materials Sciences and Nonlinear Optics **(ii) M.Sc.** in *Physics Open to candidates who have B Sc in Physics Chemistry or Mathematics*

VIII. CENTRE FOR BIOTECHNOLOGY

Ph.D. *Research Areas Plant Molecular biology* Protein Engineering, Prokaryotic/Eukaryotic/Gene Expression, Molecular Biology of Infectious Diseases Molecular Immunology, Protein Stability Conformation & Folding Bio Process Optimisation and Transcripion of Eukoryotic genes

Reservation of seats 22 5% (15% for SC & 7 5% for ST) and 3% seats are reserved for SC ST *and physically handicapped* candidates respectively Candidates belonging to Other Backward Classes (excluding creamy layer) will be eligible for deprivation points Besides all candidates who have passed last qualifying examination prescribed for admission to the concerned programme of study from the identified backward districts will also be eligible for deprivation points (For details refer to the instructions Booklet)

How to Apply: Application forms together with detailed instructions including eligibility conditions can be had either personally on cash payment of Rs 30/- per set between 10 00 a m to 1 00 *p m* and 2 00 *p m* to 5 00 *p m* on all working days (Monday to Friday) or by post by sending crossed Indian Postal Order for Rs 50/- payable to JAWAHARLAL NEHRU UNIVERSITY NEW *DELHI alongwith a self-addressed (including Pin Code)* unstamped envelope of not less than the size of 28 cms x 20 cms to THE DEPUTY REGISTRAR (ADMISSIONS) JAWAHARLAL NEHRU UNIVERSITY NEW DELHI-110 067 A maximum of two additional forms of same level of programme @ Rs 10/- each can be had with one Instructions Booklet **Money Orders are not accepted** There being different forms and Instructions Booklet for different level of programmes i e (i) M Phil/Ph D M Tech/Ph D & M C H /Ph D (ii) M A M Sc/M C A and (iii) B A (Hons) in Foreign Languages candidates should clearly indicate in their request as well as on the top of the self addressed envelope the name of the programme for which the form and Instructions Booklet is required A candidate can apply for more than one programme by filling up separate application form for each programme

Issue of Forms upto March 31, 1997 (In person); and March 25, 1997 (Through post); Last date for Receiving completed *forms*: April 2, 1997.

Note 1 Candidates who are due to appear in the respective qualifying examination prescribed for eligibility for admission to a *particular programme are also* eligible to sit in the entrance examination as per conditions laid down in the Instructions Booklet 2 Announcement for admission to Direct Ph D Programme and Part-Time (Foreign Languages) courses will be notified separately in May 1997 3 While the University shall ensure timely despatch of Application Forms soon after receipt of the request from intending candidates, it will not be responsible for postal delays

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Editor :
SUTINDER SINGH

English Lexicography and Database English Dictionaries

Which Dictionary Should I Buy?

Shreesh Chaudhary *

According to a report in the *New Scientist* (6th Jan., 1996), only five languages — Chinese, English, Spanish, Russian and Hindi — are growing in the number of speakers. There are many reasons for this. But of all "growing languages" English has been most successful *commercially. Great Britain alone earns about £ 700 million* per annum out of it. (*IATEFL News*, Aug. 1996:36).

Equivalent of nearly five billion US dollars is earned from books (*Graham, 1995:9*). The rest comes as examination and course fees, consultancy, fees for library, archives and other services and facilities given by universities and other agencies.

As Gordon Graham (1995: 9-12), a former McGraw Hill executive and the current editor of *Logos*, a quarterly of the publishing industry, says, "The British remain the chief beneficiary" of the booming trade in English language books. Of the $50 billion a year market of English books, the British account for nearly 20 per cent. Though with $18 billion the USA leads in earnings, Britain publishes 80,000 titles against 50,000 of the USA. With 18,000 titles, India is third in English language publishing.

"In no field is British export pre-eminence more evident", Graham observes, "than in the sale of English language teaching (ELT) books and materials. Companies such as Longman, Oxford, Macmillan and Heinemann have long relied on their ELT departments as steady sources of useful profits, an activity in which they have found themselves in useful consonance with the British Council, a body of which there is no counterpart in the US".

These companies earn much of their revenue from dictionaries, thesaurus and other references material for English. According to unofficial sources, Oxford University Press (OUP) alone sold nearly 300,000 copies of English dictionaries in 1994-95, mostly in Afro-Asian countries. Collins are believed to have sold over a million copies of their Collins Birmingham University International Language Database (COBUILD) 40,000 word dictionary within five years of the launch. Other publishers have also done good business. English dictionaries sell.

Of the 42 students in one of my classes recently, none claimed to have seen a dictionary of his mother tongue. But all claimed they had at least one dictionary of English at home, and they could buy another. With increasing use and prestige of English, having an English dictionary seems to have become a necessity in some homes, and a status symbol in many others. Some fat volumes in the drawing room possi-

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* *Dept of Humanities & Social Sciences, Indian Institute of Technology, Chennai-600 036.*

bly impress the visitor more than a painting or a rusted dagger or brass bowl.

But how often does one use a dictionary? In my class of 42 less than 10 claimed they consulted a dictionary whenever they heard or saw a "difficult", i.e. new word. And they met a new word when they read anything different, and they read a different thing only rarely. Yet they had a dictionary at home, though many did not know its title, neither did they know if it was adequate or if they should buy another, and which one.

Unable to decide between competing brands, many people are misled into buying dictionaries with good binding and jacket and little else. Few people pause to compare the competing titles. In this matter, even experienced English teachers do not acquit themselves much better.

There were times when Concise Oxford Dictionary (COD), or Chamber's Dictionary, and not to speak of Oxford English Dictionary (OED), etc were handed down as heirlooms. Today last year's edition is being made to appear obsolete. There are dictionaries of "real English" (CC) giving today's word to today's learners. Some others claim they give "authentic" English. Yet others claim that they alone can "really teach" English, etc. To an ordinary buyer sometimes the title seems familiar and in his mind he buys one thing but actually it may be another.

Some years ago, for instance, I bought a Webster's dictionary published by Random House. It had a good jacket, good binding, moisture proof light paper, a dictionary, a thesaurus, a short list of frequently used Greek and Latin proverbs, names and tenures of American presidents, countries with capitals and currencies, and another information of this kind. Rs. 850/-, after a 60% discount, of course, seemed nothing for this.

However a few weeks later I realized that its dictionary and thesaurus had only those words which anyone with average high school education in India would not need a dictionary for. It has hardly 20,000 words of very common use with meaning and pronunciation. Resting in the book trough my daughter has got from my father it beautifies our home and does little else.

About two years later as I was looking for a birthday gift for a college entering nephew, I found a paperback copy of Webster's Collegiate Dictionary issued by Merriam & Co. It had 70,000 words and it cost me Rs. 68/- only. I had it for a week and I found it had nearly all the new words I came across that week.

Later reading about the life of Noah Webster (*Leavitt, 1947; Commager, 1958, Rollins, 1980 and 1989*) and the association of his heirs with George & Charles Merriam & Co. of Springfield did I learn that the name Webster in course of time at least in America became synonymous with dictionary and therefore Merriam & Co. had no exclusive right to the use of this word. In a case fought and lost by the Merriam & Co., an American court had ruled however that this company could use "New Collegiate" and "Webster International" etc as exclusive brand names.

Requiring large investments of time, energy and money, business of dictionaries has always been very competitive. OED, completed in 1916, had cost its publishers £ 60,000 – Rs. 360 million by today's value. Because of such investments, it takes new methods of compilation, publication, and unfortunately enough, some unethical marketing *Chaudhary, 1994: 10-14*).

Publishers sell the same pages in combinations of different sizes and prices, to reach ever larger segments of market. OUP and Merriam & Co., leaders in this field, have a range of dictionaries. OUP, according to its 1996 catalogue, has over 30 titles—from the 20-volume 21,728 page Rs. 225,000/- *OED to Learner's Pocket Dictionary* having 496 pages for less than Rs. 200/- only. Add to this the ones produced by Chambers, Collins, Longmans, Macmillan, Heinemann, Penguin, Random House, and many others.

Their jackets carry screaming hypes like "the dictionary of the decade", "the fullest finest dictionary available", "the greatest dictionary in any language", "the best selling dictionary", "ideal for everyday use", "most easy to use dictionary", "enormous amount of information", "miniature in size but mighty in use", "complete guide to meaning and use", etc. Can their publishers be taken to court for misleading the consumers, one wonders.

Competition in book trade, especially in selling dictionaries, is not new. *Webster's American Dictionary of the English Language* published in 1828 was followed by Joseph E Worcester's *Pronouncing and Explanatory Dictionary* in 1835 and *Universal and Critical Dictionary* in 1846. This started a publicity war.

Webster's supporters, mostly from other than Boston and Harvard, charged Worcester with plagiarism which was equally hotly denied. Leavitt (1947:53) says,

> ... there were all the makings of a first class fracas, complete with rabid fans on either side, despite the fact that Webster himself was in his grave... Each publisher scurried around to secure the endorsement of prominent men. The Merriams printed long lists of statesman endorsers, and Worcester's publishers countered with a nearly solid line up of New England college presidents, with the conspicuous absence of the President of Yale.
>
> Merriam's war cry was "Get the Best!", Worcester's publishers retaliated with *16 Reasons for Subscribing to Worcester*, all of them maintaining that Webster's was a fraud.

Compared with this, OUP's *10 Good Reasons to Choose an Oxford English Dictionary* does not seem all that new or bad.

Corpus-based Dictionaries

Since 1980s computers have provided a new slogan for dictionary hawking. In 1986 Collins published *Collins Cobuild (CC)* dictionary claiming to be the dictionary of "Real English". Produced in collaboration with Birmingham University, CC editors had daily access to about 20 million words "put into a very large computer" (CC, xv). These 20 million words were taken from books, magazines, newspapers, pamphlets, leaflets, conversations, radio and television broadcasts so as to have a fair representation of contemporary English (CC, xv). Real English, according to CC (xv-xx), is text-based, contemporary, commonly used, British minus non-international usage, and in received pronunciation....

Success of CC caused a spate of "corpus-based" dictionaries. Leading publishers went for their brands of dictionary of this genre with ever-larger data-bases. OUP has led a consortium in creating a *British National Corpus* (BNC), "a massive and carefully balanced computer databank of modern written and spoken English". Others in the consortium are OUP, Longman, Chambers, Oxford and Lancaster universities, and British Library.

The 90 million words in the BNC have come from books, journals, etc and about 10 millions spoken words from radio, television, etc, besides those provided by volunteers who agreed to carry a device on their body to record all that they spoke or heard for a week. These volunteers are "British, young and educated". BNC, according to Crowther (1996), Chief Editor of OALD, gives "a reliable picture of the core of the language as it is today".

The claim is questionable, but interesting. The 100 million word BNC for instance has only 524,068 different words of which 258,575 words occur in the corpus only once; 67,801 occur twice; 32,732 words occur three times; 1,125 words account for nearly 66%, and 120 commonest words like *a, an, the* etc for over 58% of the corpus.

Sinclair (1986), Chief Editor of CC, claims that a dictionary with words from such a corpus "provides a fair representation of contemporary English". "This magnificent new resource", according to Crowther (1996:6), has enabled us *as never before* to determine the relative frequency of words and their meanings, to identify new words and co-occurrence of words, and to present a wholly accurate picture of the syntactic pattern of today's English..." (*italics mine*). The dictionary also gives core vocabulary with definitions in natural English that are both accurate and easy to understand, claims Crowther (*Crowther, 1996:6*).

To make their books sell, value addition as in other consumer products, is also done. OALD, for instance, has 16 study pages where information about English grammer, lexicon and culture is provided. It also has maps, illustrations and an Indian supplement with 2,351 words from Indian languages frequently used in English in India. Indian supplement is a special feature of OALD sold in India.

Corpus based dictionaries are not all that new. Corpora have been used almost ever since there have been dictionaries. What has changed is the size of the corpus. First dictionaries of English in the early 17th century appeared as alphabetical lists of words —

> conteyning and teaching the true writing and understanding hard vnvsvall English wordes borrowed from the Hebrew, Greeke, Latin or French, &c" (*Burchfield, 1985:77*).

Robert Cowdrey's (1604) was the first English dictionary containing about 2,500 words

> with interpretation thereof by plaine English wordes gathered for the benefit & helpe of Ladies, Gentlewomen, or any other vnskilfull persons, whereby they may the more easilie and

better vnderstand many hard English wordes which they shall all hear or read in scriptures, sermons or elsewhere, and also be made able to vse the same aptly themselves (*Burchfield, 1985:77*).

So was Nathan Bailey's (1721) *Universal Etymological English Dictionary* with 40,000 words. His 48,000 word *Dictionarium Britannicum* published in 1730 had a database too. Dr. Johnson's *Dictionary of the English Language* published in 1755 was a landmark in the history of English lexicography. With 40,000 words with citations, it was used as standard in both the UK and the USA until the mid-19th century. Johnson had taken illustrative examples for theological words from Hooker and the Bible; for Natural History from Bacon; from Raleigh he drew the phrases of politics, war and navigation; the dialect of poetry from Spenser and Sydney; and the diction of common life from Shakespeare (*Burchfield, 1985:86*).

Between Dr. Johnson and Dr Murray, the first Chief Editor of the Oxford English Dictionary (OED), at last three others deserve mention — Noah Webster's *American Dictionary of the English Language* (1828), in England Charles Richardson's (1836-7), and in America again Joseph Worcester's (1846) and (1860).

With 70,000 words, their etymology and their usage illustrated with citations, Webster's was the largest and perhaps the best of these and was used as authority on both sides of the Atlantic almost until the end of the 19th century. Webster had produced in single handed without the support of a patron and assistants, unlike Dr Johnson; or, unlike Dr. Murray, without the support of a company, i.e. Oxford Clarendon Press, or a university, i.e. University of Oxford, or a society i.e. the Philological Society.

Webster had worked long hours at home, on boat and abroad to compile his dictionary. But before starting work on it he had learnt 26 foreign languages, including Sanskrit, so as to be able to record authentic etymology (*Leavitt, 1947:28*).

Leavitt (1947:18-22) rightly describes the sense of wonder we may feel looking upon the accomplishment of a single person :

> Webster had been and all his life continued to be an indefatigable collector of data... his experience as a journalist had taught him to keep his notes thoroughly carefully and in the most exact order... He was, as Sir James Murray said of him, "a born definer of words". And he had the priceless faculty of writing a finished draft offhand and have it as correct as all the resources of his data and all his genius for detail could make it... With negligible assistance he not only compiled but wrote out in his own hand the entire manuscript of a dictionary comprising 70,000 listings, preface of textbook proportions and much supplementary material.... The amount of time required for research on individual listings — to gather citations, to trace down etymologies, to establish usage, to determine the order of precedence among multiple meanings, to ascertain and to conform definitions — is appalling to contemplate..."

It is as if we were looking at the Tajmahal or the Eiffel Tower as one man's work.

The Most Ambitious

OED seems to be the most ambitious and the biggest ever databased work in the history of lexicography in any language. Work on it was started by James A H Murray in 1878 under contract with the Clarendon Press, Oxford University and the Philological Society. The story of James Murray's life and his struggle in competing the OED has been sensitively described by Elisabeth Murray (1977), one of his grand daughters.

James Murray, the self-educated eldest son of a Scottish tailor, was a 250-pounds per annum teacher at a public school near London. This salary had to support a family of 13 including seven sons, four daughters and numerous visitors and guests. Dictionary was additional work bringing him no money though taking much time and energy. The dictionary was completed in 1916, four years after Murray's death.

With six sub-editors, two co-editors and hundreds of voluntary readers all over the world Murray saw every English word in print or script since 1150 AD, recording each word's etymology, changing meaning, pronunciations, usage and citations in works of literary, philosophical, historical or scientific importance.

The *Scriptorium*, made near Murray's house first at Mill Hill near London and later at Oxford, to keep the citation slips became a tourist attraction. Hundreds of voluntary readers from accounts, banks, business, customs, commerce, engineering, ports, post office, prison, sciences, shipping and even lunatic asylums were involved in research, citations and compilation of entries for the dictionary. Since as many acknowledgments, corrections, clarifications, comments, compliments, complaints and suggestions came to as left the scriptorium the British post office later had a pillar box installed outside Murray's house with the inscription — "Dr. Murray, Oxford" (*Murray, 1977:213*).

Walter Skeat, a 19th century philologist, wrote a poem to Murray when words beginning with 'C' had been compiled, in 15 years.

> *Wherever the English speech has spread*
> *And the Union Jack flies free*
> *The news will be gratefully, proudly read*
> *That you've conquered your ABC!*
> *But I fear it will come*
> *As a shock to some*
> *That the sad news will be—*
> *That you're taking to* dabble *and* dawdle *and* dose
> *To* dullness *and* dumps *and (worse than those)*
> *To* danger *and* drink
> *And shocking to think —*
> *To words that begin with d - - - - -*
>
> (*Murray, 1977:273-4*)

Since Murray there have been other corpus-based lexicographical works. *Hobson Jobson*, first published in 1886 (*Yule and Burnell, 1886/1984*), a glossary of words used in Anglo-India had been compiled with reference to some 600, many of them rare books. In this tradition, Subba Rao published in 1954 through Clarendon Press another list of Indian words in English.

To write a 'scientific' grammer, CC Fries collected over a million words exchanged in New York on telephone in 1954 which led to his *The Structure of English*. Another notable book of this kind was done in the 1960s by Sir Randolph Quirk, the present Vice Chancellor of London University, and his co-workers, who created a massive data-base from printed and spoken words to produce *A Grammer of Contemporary English*. Their data-bases were of course smaller. Yet for their time and technology and from the point of view of the dictionary's usefulness it was no mean a feat.

Since the advent of computers there have been many data-bases. In the 1980s scientists of the University of California at Berkeley had collected 12 million words of Associated Press newswire text, about five million words of the *Wall Street Journal*, the million word *Brown Corpus*, and a collection of about half-a-million characters of e-mail interchanges. In India, researchers in English Dept at Shivaji University at Kolhapur have created a million-word corpus of Indian English in print. Now they are working on a corpus of spoken English. Recently there have been significant advances in this field.

Tokyo University of Foreign Studies and its Institute for the Study of Language and Culture of Asia and Africa has created big data-bases with works of authors like Premchand and Tagore.

Corpus-based work is not totally new. So the claim of CC (p.xx) compilers that they had daily access to about 20 million words "put into a very large computer" sounds suspicious. Moreover, it is not clear what "large" means here — is it a description of its power, or of the box? Do such phrases not mislead the computer-illiterate people of Africa and Asia?

Yet these dictionaries are not free from bias. As CC (p.xx) argues, "No set of texts, howsoever large, can be fully relied on; the information from the lexis has been analysed and appraised by a team of lexicographers whose professional training has also been used whenever there is only a small amount of evidence of the usage of a word of phrase." CC seems a bad compromise between empiricism and opportunism.

Questions have been raised about the representativeness of the corpora and their relevance to the language learner. In the University of California corpus, 428 words occur 4,131 times per million. The word *that* alone, for instance, occurs over a 100,000 times. In the same corpus, *increase* occurs 230 times per million, but *decrease* only 10 times per million. Acknowledging the baffling nature of natural language, Liberman and Church (1991), speech signal scientists, observe (P.804):

> In general no matter how much text we look at, there will always be a large tail of words that appear only a few times. In the Brown Corpus, for example, 40,000 words appear five times or less. Many of these words are not rare.....

The following words, for instance, appeared only once in the Brown Corpus : *banning, bushel, cocaine, deficits, demonstrators, felony, funding, helicopter, hostage, lawsuit, losers, riots, rivals, worldwide,* etc. In the CC corpus *on* and *that*, for instance, occur once in about 100 words (CC, xviii), and *agony, core, jet society* etc. occur once in about 100,000 words. Is the infrequent word also inessential? Does a user of

English need *increase* much more than *decrease*?

Pidgins and Creoles show that communication does not suffer so much for want of *that, in, on* etc, as *for ban, bushel etc. It is true,* CC(p.xx) claims, "a relatively small number of words account for a very large percentage of what is written and spoken everyday". But these words alone may not be enough, except for reading simplified texts. Most non-native learners of English who, according to CC(p.xx) "do not use it in their immediate society, but need it because of their international connections..." need to know infrequent words like *core, jet, secretly* etc as well as the meaning of *on* and *that*.

That is a problem with many of these dictionaries. They seem to have an impression that all non-native and many native learners are interested only in words frequently found in the British educated youth's conversation or writing. So CC, for instance, does not have *ablative, chrestomathy, concupiscence, domino, lave, necrology, steatopygic* etc, but has long lists for *put, set, make* etc. OALD does not have *colloquium, chalcenterous, midden, unco,* etc, but has nearly 30 uses for *set*, 40 for *put*, etc, giving the British usage. CC(*p.xviii*) *advises against looking here for 'obsolete*' dialectal or highly technical words. "This dictionary", it claims, "is designed for everyday use".

If, as CC expects, researchers are to use this dictionary, then they need infrequent words too — they are neither obsolete, nor dialectal, nor technical. They have been taken from 20th century books. Perhaps *ablative* is the only technical word here.

Actually, why does a foreign learner need English? Does he need it to communicate with only an American or British English speaker? Or, does he need it also for communication with others? There already are as many native speakers of English as non-native, and many more speakers of non-standard varieties than of the standard ones. Only five out of a hundred respondents in a random survey in India claimed that they had any occasion to interact with a native speaker of English *(Kachru, 1986:83-99)*. Within 10 years, Crystal (1996:12) feels, there will be more non-native than native speakers of English, and in 50 years non-natives may be one and half times more than the native speakers.

Real English

So what is "Real English"? Historically speaking, some variety of British English can be called real, i.e. original or natural (CC, p. 1196), and not learnt. Received Pronunciation (RP) however may not be called 'Real English'. It is not a natural variety *for most people even in Britain (Rosewarne, 1996)*.

A need-based definition may lead to different varieties of English. American English, for instance, may be real English for most Indian students as more of them now go for higher education in America, not in Britain. Rather than learn to say 'terrace house', they would learn 'row house' etc.

Gimson (1978:45) concludes:

> ... *if there is to be a single natural language* model for foreign learners it is more reasonable that it should be the English in America, if only because of the immense universal preponderance of this form, as well as for reasons of its political and commercial importance.

British English by law of primogeniture has the strongest claim to the status of 'Real English'. But, as Widdowson (1993:3) remarks, how tenable is this claim in a world ruled by the UN and the US armies? By statistics American English has a better case for calling itself 'Real English'. Most personal computer in the world have American spelling. In pronunciation, many local standards have developed, and internationally, American English is acquiring more adherents.

TOFEL, which is a test of American rather than British English as foreign language, is taken by hundreds of thousands every year. No test in British English has as many takers. Most EFL learners watch more American films and television, read more American novels and newsmagazine, and receive a sizeable quantity of radio broadcasts, in addition to the English printed and broadcast in their own countries. More e-mails and passenger planes fly from and to the USA, as do the telephone calls, than elsewhere. The British Broadcasting Service (BBC), of course, reaches millions. But how much of the BBC is about Britain?

To talk then of the British English alone as 'Real English' is symptomatic of what Phillipson (1992) calls 'linguistic imperialism'. Others might call it blatant commercialism. Any dictionary which confines the user to one region cannot be as good as another that gives him the world.

Equally questionable is these dictionary makers' obsession with contemporariness. Is present all important? Does past not matter for a foreign learner? And how contemporary is contemporary?

Even a cursory glance through the history of the English language *(Baugh, 1968; Burchfield, 1985; Jones, 1988; Potter, 1967; etc)* can show that most words that go out of use, or acquire new meanings, are those that are frequently used e.g. auxiliary verbs (be and its derivatives like *is*, *was* etc), diminutives of nouns (*poet*, ~ *poetess*, ~ *author*, ~ *authoress*, etc), pronouns (*thou*, *je*, etc), prepositions (*betwixt*, *behindhand* etc) etc.

Pronoun *thou* is heard and seen only in the Bible and church now. The distinction between *shall* and *will*, and among *can*, *may*, *could*, *might* etc has almost disappeared. Pronunciation and meaning of many words have changed so much that Shakespeare's or even Dr Johnson's speech may sound like foreign tongue to many modern users of the language. *Silly* could be a compliment for a girl, and so could be *gay* for a youngman even during Dr Johnson's time, but these words no longer mean the same.

Mark Antony laments the "most unkindest cut of all" not as an exaggeration, using double superlatives in violation of the rules of English grammar; he uses it as many people did during the days of queen Elizabeth — as an adjective of the adjective, as we say *most perfect* and *quite alright*. Shakespeare rhymes sea with *say*. *Great* rhymed with *seat* even in Dr Johnson's days. Feminist movement has changed the rule of subject - verb agreement so much that not only reporters of popular newspapers but learned professors also write sentences like *no one can do their work under such conditions*.

Nesfield or Wren and Martin, until recently the ruling deities in the field of English grammar, would frown at such sentences. But to claim that this alone is real English is going a little too far too soon. Words often used also change often, in all respects — spelling, meaning, pronunciations, usage, etc.

But many other words, not in such currency, have a long shelflife, they stay ok for a long time even when not in use. An average user of the language meets both kinds.

CC (p.xviii), for instance, claims, "Common words are the powerhouse of the language. Fluency in using these words is of much more value than knowing all sorts of peculiar words that are hardly ever used". Experience shows that all common situations also have some specialist words. Widdowson (1993:6-7) observes:

> When I look at my daily newspaper I find innumerable words from the terminology of technology, law, financial affairs and so on which I simply do not understand... The COBUILD dictionary, for example, claims to be a record of real English. But most of these words of restricted use do not appear (there). This is because, reasonably enough, the dictionary only contains words of wide range and common occurrence. If this is the way standard is to be defined, then these words of restricted use do not count by definition. Yet they are real enough and indeed can be said to represent the reality of English as an international language. For the reason why English is international is its lexis has diversified to serve a range of institutional uses.

Similarly, shall we from 'real English' exclude Shakespeare, Donne, Milton; Whitman, Thoreau, Emerson; Burke, Gibbon, Macaulay; Achebe, Tutuola, Raja Rao? Will this language then be any different from group specific slangs?

RP admittedly is well-documented. But that does not make it more real or acceptable. Many English linguists *(Gimson, 1978; Cottle, 1975; Widdowson, 1993)* and many non-English linguists *(Kachru, 1985 and 1988; Nihalani, 1988; Nadkarni, 1993)* dispute RP's claim to universal acceptability. Gimson suggests:

> It is time that an international form of English should be devised... Such a model whose origins would have no obvious national or geographical origins would lose the disadvantage of parochiality from which, it is claimed, the British (minority) standard suffers (*Gimson, 1978:45*).

In a global survey *(Morley, 1991)* native speakers of English on an average were found to be among the least intelligible speakers of English. Actually, RP is yielding place to other varieties, such as Estuary English, in London itself *(Rosewarne, 1996:15)* So British English or American English is certainly not synonymous with world English.

Recently this point was made forcefully by Widdowson (1993:7) :

> Standard English is no longer the preserve of a group of people living in an off shore European island, even if some of them still deem to think it is. It is an international language... It is a matter of considerable pride and satisfaction to the native speakers of English that their language is an international means of communication. But the point is it is only international to the extent that it is not their language. It is not a possession which they lease out to others while still retaining the freehold. Other people actually own it....

A corpus of real English should include all major varieties — regional, registral, social, spoken and written. It should combine the ephemeral with the eternal, peripheral with the central, and dialectal with universal. It should record the core of the World English, the features that are common to African, American, Asian, Australian, British, Canadian, Caribbean, Indian and other varieties that help their users to communicate with one another in spite of obvious dissimilarities.

Essentials of Dictionary

What kind of dictionary can do that? This was answered by James Murray in his plan for the OED more than a century ago. In a battle lasting over six years (*Murray, 1977*), Murray convinced the Oxford University Press that if a new dictionary was worth making then it must have all the words ever used in English and available anywhere in print or script. He also insisted on the following for all entries :

(1) current pronunciation,
(2) part of speech and other grammatical information,
(3) earliest printed use,
(4) original primary meaning,
(5) later meanings set out in chronological order,
(6) all meanings illustrated through citations and evidence, and
(7) etymology.

No dictionary other than the OED itself meets criteria. Few libraries and fewer individuals in Afro-Asia can afford it — its current price being over £ 3,100/-. On CD ROM, issued recently, it costs over £ 500.

I would also recommend Merriam Webster's *New Collegiate Dictionary*. It is good on all counts and has a large number of words, though for about Rs. 2,500/- it is expensive for students and individuals.

Among the affordable dictionaries I would recommend Concise Oxford Dictionary (COD) enthusiastically. It comes in several editions — leather bound, hard bound and paperback. A hardbound copy can be had for about Rs. 900/-. It has over a 140,000 words, and it is good enough for almost anyone not stuck with too technical a word. It also meets nearly all the major criteria suggested by Murray. Only pronunciation is not easy to decipher. That sometimes forces me to see OALD.

I recommend OALD to my students. It meets many of the criteria set by Murray. It gives American and British pronunciations, meanings illustrated with citations from the corpus, grammatical information about each listed word, collocations with other words, related forms and illustrations with photographs, diagrams and sketches wherever relevant. Etymology is the only major criterion laid by Murray that it does not meet.

It has a compendium of 3,000 words from Indian English, 10 appendices containing lists of irregular verbs, use of numbers, punctuation marks, words indicating family relationship, common first names with their pronunciation in Britain and America, ranks in the British and American armed forces, chemical elements with their symbols and atomic numbers, SI units, a list of word on which explanatory notes have been given, and another list of about 3,500 words which have been used to define the 65,000 words listed in the dictionary. In addition, it has 16 study sections on subjects like how new words are made from existing words and particles, how English grammar works, etc.

Its latest edition, with Indian compendium, was launched in India in June 1996. I have used it for nearly six months. During this period I have read in addition to usual texts and news magazines, two novels, a book of history, a biology, a book of essays, a book each in psychology and linguistics. In all of these I have come across several new words, but only about a dozen of these were not listed in the OALD. For Rs. 300/- this seems a good bargain.

References

Baugh, Albert C (1968) *A History of the English Language*. New Delhi : Allied Publishers.

Burchfield, R (1985) *The English language*. Oxford University Press.

Chaudhary, Shreesh (1994) "Real English and its Dictionary", *IATEFL Newsletter* No. 125 Nov., 1994 Pp. 10-14

Commager, Henry S (1958) *Noah Webster's American Spelling Book*. New York : Columbia University Press.

Cottle, B (1975) *The Plight of English*. London . Edward Arnold.

Crowther, Jonathan (ed 1996) *Oxford Advanced Learner's Dictionary*, Oxford : Oxford University Press.

Crystal, David (1996) "The past, present and future of English rhythm", *Speak Out!* No. 18, Summer 1996, Pp. 8-14.

Gimson, A C (1978) "Towards an International Pronunciation of English" in *In Honour of A S Hornby*. Oxford : Oxford University Press.

Graham, Gordon (1995) "World Publishing and the English language" *English Today* 41 Vol. 11 No. 1 Jan., 1995 Pp. 9-12.

Jones, Charles (1988) *A History of English Phonology*. London: Longman.

Kachru, Braj B (1985) "Standards, Codification and Sociolinguistic Realism : The English Language in the Outer Circle" in Quirk, Randolph & Widdowson, Henry G (eds., 1985) *English in the World : Teaching and*

Learning the Language & Literatures, Cambridge: Cambridge University Press.

____________ . (1986) *The Alchemy of English: Spread, Functions and Models of Non-native Englishes*, Delhi: Oxford University Press.

____________ . (1988) "The Sacred Cows of English" *English Today*, No.16, Oct., 1988.

Leavitt, Robert K (1947) *Noah's Ark: New England Yankees and the Endless Quest*, Springfield: G & C Merriam & Co.

Liberman, M Y & Church, K W (1991) "Text Analysis & Word Pronunciation in Text to Speech Synthesis" in Furui, S & Sondhi, M M (eds., 1991) *Advances in Speech Signal Processing*, New York : Marcel Dekker, Inc.

Morley, Joan (1991) "Pronunciation Component in Teaching English to Speakers of Other Languages" *TESOL Quarterly*, 25.3 Aug 1991 Pp 481-520

Murray, K M Elisabeth (1977) *Caught in the Web of Words James A H Murray and the Oxford English Dictionary*, London : Yale University Press

Nadkarni, M V (1992) "On Liberating English to be a World language" *World Englishes*, 11.2/3, Jul/Nov., 1992

Nihalani, Paroo K (1988) "RP and the teaching of English in the Commonwealth Countries" in Jha, A & Bhargava, R (eds. 1988) *New Directions in English Language Teaching*, Jaipur : Pointer Publishers.

Phillipson, Robert (1992) *Linguistic Imperialism*, Oxford : Oxford University Press.

Potter, Simeon (1967) *Our Language*, London : Pelican.

Quirk, R, Greenbaum, S, Leech, G & Svartvik, J (1972) *A Grammar of Contemporary English*, London : Longman.

Rollins, Richard M (1980) *The Long Journey of Noah Webster*, University of Pennsylvania Press : Pennsylvania.

____________ . (1989) *The Autobiographies of Noah Webster*, University of South Carolina Press.

Rosewarne, David (1996) "Changes in English Pronunciation and some implications for teachers and non-native learners" *Speak Out!* No. 18, Summer 1996, Pp. 15-21.

Sinclair, John (1987/1990) *Collins Cobuild English Language Dictionary*, London : Collins.

Subba Rao, G (1954) *Indian Words in English*, Oxford : Clarendon Press.

Widdowson, Herbert G (1993) "The Ownership of English" in *IATEFL Annual Conference Report : Plenaries*, 1993, Pp. 5-8.

Yule, Henry & Burnell, A C (1886/1984) *Hobson Jobson : A Glossary of Colloquial Anglo Indian Words and Phrases, And of kindred Terms, Etymological, Historical, Geographical & Discursive*, New Delhi : Rupa & Co.

अभियांत्रिकी महाविद्यालय, कोटा
अकेलगढ़, रावतभाटा रोड, कोटा–10
(राजस्थान सरकार का स्वायत्तशासी संस्थान)

विज्ञापन क्रमांक : एफ(5)2/3/96-97/ दिनांक : 17-2-97

अनुसूचित जाति, अनुसूचित जनजाति एवं अन्य पिछड़ी जाति के अभ्यर्थियों हेतु विशेष भरती अभियान

निर्धारित प्रपत्र पर निम्नलिखित पदों के लिए अनुसूचित जाति, अनुसूचित जनजाति एवं अन्य पिछड़ी जाति के अभ्यर्थियों से अधोहस्ताक्षरकर्ता के कार्यालय में दिनांक 31 मार्च, 1997 तक आवेदन पत्र आमंत्रित किए जाते हैं :–

क्र. सं.	पद का नाम		वेतन श्रृंखला	पदों की संख्या		
				अनु० जाति	अनु० जनजाति	अन्य पिछड़ी जाति
1.	**व्याख्याता**		रू० 2200-4000	4	-	-
	–इलेक्ट्रिकल इंजीनियरिंग	–एक पद	[AICTE Norms]			
	–कम्प्यूटर इंजीनियरिंग	–एक पद				
	–इलेक्ट्रोनिक इन्स्ट्रूमेंटेशन एण्ड कण्ट्रोल इंजीनियरिंग–(अनुबंध पर)	–एक पद	(समेकित वेतन पर)			
	–रसायन शास्त्र	–एक पद				
	[टिप्पणी : उपरोक्त व्याख्याताओं के पदों के लिए अनुसूचित जनजाति एवं अन्य पिछड़ी जाति के अभ्यर्थी भी आवेदन कर सकते हैं]					
2.	**तकनीकी सहायक**		रू० 1640-2900	-	1	1
	–मैकेनिकल इंजीनियरिंग	–एक पद				
	–कम्प्यूटर इंजीनियरिंग	–एक पद				
3.	**आशुलिपिक (अंग्रेजी/हिन्दी)**		रू० 1400-2600	1	1	-
4.	**इलेक्ट्रिशियन ग्रेड-II**		रू० 950-1680	1	-	-

आवेदन पत्र एवं विस्तृत विवरण अधोहस्ताक्षरकर्ता के कार्यालय से कार्यालय समय प्रातः10-00 बजे से सायं5-00 बजे तक अनुसूचित जाति एवं अनुसूचित जनजाति के अभ्यर्थियों के लिए शुल्क रू० 12-50 के भारतीय पोस्टल आर्डर तथा अन्य पिछड़ी जाति के अभ्यर्थियों के लिए शुल्क रू० 25-00 के भारतीय पोस्टल आर्डर देकर प्राप्त किए जा सकते है। डाक द्वारा आवेदन पत्र मँगाने के लिए निर्धारित शुल्क के साथ रू० 2-00 का डाक टिकिट लगा एवम् स्वयं का पता लिखा 11" x 5" का लिफाफा, रजिस्ट्रार, अभियांत्रिकी महाविद्यालय कोटा, रावतभाटा रोड़, कोटा (राजस्थान)–324010 को भेजकर मँगाया जा सकता है। प्रत्येक पद के लिए पृथक्–पृथक् आवेदन करें।

रजिस्ट्रार

Re-engineering Higher Education

R.P. Bhatnagar*

Qualitative improvement of higher education means improvement in the quality of its output. The output of higher education is the students who receive education at any institute of higher education. The effect of education received is visible in the knowledge, attitudes, skills and values which the students acquire as a result of their being taught at the institute. Thus, quality of higher education means acquisition of desired knowledge, attitudes, values and skills. Hence, qualitative improvement of higher education means doing all that which is necessary for achieving these goals, which need to be predetermined. Predetermined standards of performance on these variables should define the kind of output which is desired. The output of any organization cannot be of high quality without improved quality of its input resources, and the processes of the system taken together. Input resources of higher education are constituted by 4 Ms. These are men (including teachers and students both), money, matter and the material. All of these are important. But, men (the human resource input) is the most important, because it is the human beings at work in all institutions of higher learning who use effectively the other components of input resources, i.e. the money, matter and material. Secondly, the human resources input cannot be regarded, like other components, just a commodity, not just the physical entity : rather it is the sum total of knowledge, attitudes, values, skills, thoughts, ideas, feelings, sentiments and emotions, all floating in an ocean of experience. It is a psychological entity, highly complex and delicate to handle and manage.

Unfortunately, very little attention has been paid to strengthening of this component of higher education system. The result is that this component of the system, in the recent past, has become extremely week. Faulty recruitment, demoralizing socio-political ecology, and absence of any integrating mechanism have caused a great setback to this part of the input resource of the system. Hence, even if we effectively change the other input resources such as *matter* by which I mean the curriculum, *material* by which I mean the equipment, building, space, laboratories, etc and *money* position this will not bring satisfactory return as the matter, material and money will not be effectively utilized in the absence of willing and well motivated teachers and students. So, I urge to give top priority to the improvement of the quality of this human resource component of the system. All institutions of higher learning are basically human organizations. If human organization of these institutions goes out of balance all the efforts of the world will fail to produce desired results.

My non-directive encounter with a large number of teachers of institutions of higher learning in the country has demonstrated several truths about their psychological make-up. I have found that teachers at work in these institutions can be broadly classified into two groups — (1) One including those who are not competent and whose number is increasing day-after-day due to political corruption inherent in the democratic system, and (2) those who are competent but suffer from psychological disturbances due to entry into the system of these incompetent ones. The incompetent weaklings of the system, failing to derive satisfaction from their professional activities try to compensate for the same by indulging into undesirable socio-political activism which frustrates the other group of competent persons leading them, ultimately, to alienation and demoralization. Consequently, the whole of the organizational environment of the institutions of higher learning is so changed that quality teaching and proper guidance of the students become non-existent. Teachers, by and large, do not teach, students do not attend classes, courses are not completed, fundamental concepts are not clarified; an extreme sort of apathy to learning develops both in teachers and the students. As a natural process the virus of corruption permeates into every cell, the examination system for which teachers are more responsible than the students. This makes the examination system a farce, just an eye wash, totally invalid and unreliable making not much difference between the input and the output of the system. The whole situation becomes extremely disappointing and the climate, thus generated, becomes entirely unacademic and unprofessional. The system of higher education loses its relevance and goes out of joint with the needs of the society. It becomes obsolete. There are several other contextual variable, too, which contribute to this unfortunate situation.

**Retd. Professor of Education, Meerut University, U.P.*

But, the most powerful factor is the teacher himself. So, I always urge 'upgrade the quality of teachers and, thus, ensure the qualitative improvement of higher education.

For achieving this objective we must, first of all, realize that most of the problems pertaining to higher education are human and social rather than physical, technical and economic. For example, what prevents teachers from taking classes regularly; what prevents them from preparing for teaching, from learning themselves and teaching well; what prevents them from evaluating students' answer-books honestly; what prevents them from helping and guiding students and showing genuine interest in them; what prevent them from being a good teacher. In fact, re-engineering higher education means making the teachers, the human resource input of higher education system professionally dynamic and integrated with the system. Conditions have to be created for this in the institutions of higher learning which would make the teachers feel that they have roots there; they belong and have a function there; they have a purpose of their work and they are proud of achieving the same. This kind of work culture and a social structure have to be created in the institutions of higher learning. If this is done there will emerge an inbuilt powerful control mechanism of performance behaviour of teachers in these institutions; and teachers will be functioning more effectively wherever they are.

For achieving this goal of recreating a new socio-cultural environment in the institutions of higher learning a powerful and dynamic leadership in the person of the vice chancellors of universities and principals of graduate and postgraduate colleges is most needed. These have to be persons who have high degree of three types of skills — technical, human and conceptual. Technical skills relate to their knowledge of methods, techniques, procedures, etc pertaining to various aspects of teaching and learning. Human skills imply their ability to deal with teachers, students and other people at work, the ability to work with and through them and get the task completed, the ability to carry them with themselves. The conceptual skill means appreciating and understanding certain broad concepts related to higher education such as objectives of teaching learning, psychological determinants of human behaviour, organizational climate, process of decision making, leadership, conflict management, management by objectives, performance based campus, etc. For strengthening this component of higher education, recruitment procedures have to be streamlined. High level experts having enough knowledge of these concepts and task requirements alone should be associated with this job. At the moment appointment of vice chancellors has become a matter of political bargaining. Unless the so called high level people currently functioning at this stage are honest and upright, qualitative improvement of higher education will remain only a dream. (During the past few years the functioning of Higher Education Commission of Uttar Pradesh has come into great disrepute. This has to be looked into by the power that be.) Having recruited the most competent persons, they should be put under *full one year's training* in educational management, planning and financing.

Worst is the position of recruitment of teachers of higher education. Not even two per cent of those recruited during the past ten years are competent to teach graduate classes, not to speak of postgraduate classes. Not even one out of one thousand can guide Ph.D. level research. There are many reasons of this. What I wish to emphasize is that either we should find out these reasons and gather courage to eliminate them accepting this as the pious responsibility of every citizen or we must stop deliberating on re-engineering higher education for qualitative improvement.

Building up an effective control into the system of higher education is of immediate necessity. At the moment it is found that all control centres have been eroded. Nobody is responsible to anybody for anything. Some kind of reward and punishment system has to be introduced immediately; otherwise the principals and the vice chancellors, however skillful they may be, will fail to achieve the goals. The associations of teachers may contribute a lot in this regard, if they commit themselves to the profession and forget their self interests and power interests. Instead of increasing their coercive power, they would do better to increase their persuasive power for improving standards of teaching learning both over the university and college teachers. This will be a great service they can render in the field of higher education. Politicization of teaching learning should be informally declared a social crime and whosoever commits it should be publicly condemned.

In the end I would say let us stand up against all odds in the field of higher education. The crime of life is not to die, but to grow dull and to "die like sheep". Let us do something, at whatever level we are, to save higher education system of the country from crumbling down.

Communication Centres in Health Universities

N. Gopalakrishna *

The activities of universities in India are generally classified into the following areas : (1) Teaching, (2) Research, and (3) Extension. The term extension includes communication of information also. Some universities, particularly Agricultural Universities, have very strong, fullfledged communication centres within or outside the extension activity.

Of late, there has been establishment of Health Universities in India. The activities in these health institutions could be classified as (1) Teaching, (2) Research, and (3) Service. Here also the term service includes communication and information dissemination activities.

In general universities, the communication activities are undertaken by separate divisions called, *Prasaranga*, which means 'the unit of dissemination of information'. Information dissemination through these units are effectively undertaken. Most of the university communication activities lay stress on the print media.

Importance of Communication

Communication plays an essential role in disease prevention and health promotion. Programmes designed to promote changes in health behaviour and to encourage early detection and prompt treatment of illness have demonstrated that mass media and other communication strategies can be effective in reducing the risk of serious illnesses.

Communicating effectively about health is a difficult task. Health information is often complex and technical. In addition, the information may be inconclusive, controversial, contradictory and subject to change as new research findings are released. Many diseases such as cancer are fear-arousing; individual responses may be emotional. New health information may conflict with long-held personal beliefs.

Communication of messages and programmes for health professionals, patients and the public have been developed in institutions like National Cancer Institute, USA. They include planning and strategy selection, which includes review of available data, identifying existing activities and gaps, writing goals and objectives, gathering new data, determining target audiences, establishing target audiences, assess resources, draft communication strategies.

In view of the enormous research and development work, the information available in the area of health is plenty. In India, where blind beliefs and superstitions are deep rooted even at the threshold of the 21st century, creating awareness in the area of health among the general public and particularly in rural and semi urban areas is the need of the hour. Similarly, bringing to light the new knowledge generated through research to keep the health personnel posted with the latest information is also highly essential.

Communication Centres

Communication of health information to the needy through various media to different kinds of audiences comprises the activities of communication centres. Such activities are not being undertaken in all health institutions in India as all health institutions do not have fullfledged divisions for this purpose. Traditional universities and some agricultural universities have well organised *Prasaranga* divisions.

Objectives

Establishment of communication centres in health universities is to achieve the following objectives :

1. Identifying thrust areas in the field of health in its broadest sense;
2. Mobilising and coordinating health information in an organised and scientific manner;
3. Communicating information to the general public, to the health professionals and to all others interested through print and electronic media;
4. Providing increased visibility of health information among the people in the particular state and also throughout the country;

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5. Providing information support to the administrators, legislators, parliamentarians and policy makers in the country; and

6. Providing rapid communication by using available technology and thereby avoid duplication of research.

Functions

The organisation and functioning of the communication centres may be as follows :

a) Book Section

b) Periodicals Section

c) Audio-Visuals Section

d) Public Relations Section

The details of each of the above sections could be worked out according to the volume of work envisaged under each category by each university.

In addition, these centres could undertake the following activities as well :

a) Providing biomedical information and communication like bibliographical information through computer network to scientists within and outside the university;

b) The University-NICNET and other network could access various databases on biomedical sciences;

c) It can build up an effective management information system (MIS) for decision making;

d) Periodical workshops could be held on biomedical communication for the benefit of teachers, researchers, editors of other biomedical journals;

e) Access to E-mail, Internet and MEDLARS among health universities and institutions could be provided; and

f) The unit could help organisers of National Science Day, World Health Day, World No Tobacco Day and many other such occasions.

Presently, the Division of Publication & Information of the Indian Council of Medical Research, New Delhi is providing the facilities mentioned at (a) to (e) above.

In the National Institute of Mental Health and Neuro Sciences (NIMHANS), (Deemed University), Bangalore information, education and communication in respect of health are undertaken through the departments of Publication, Health Education, and Library & Information Centre.

The Audio-Visual Research Communication (AVRC)/Educational Media Research Communication (EMRC) programmes should be a part of communication centres in health universities. There are several health institutions and many health universities are coming up in India. It is high time that such institutions get UGC-sponsored AVRCs/EMRCs.

Building

A permanent, spacious building accommodating the four sections mentioned should be made available to the communication centre.

The details of store rooms for books, office rooms to house the staff members, adequate space for each of the above-named units need to be worked out depending on the volume of work in each of the units in a particular university.

Seminar room, Sales counter, computer rooms, Exhibition facilities for visitors, garage for parking of vehicles of the unit need to be earmarked in the building.

If a printing press is proposed as a part of the unit, adequate provision should be made and particularly, the basement floor of the building is preferable.

Photography unit being a part of the communication centre activity should find a prominent place.

Advisory Committee

In order to provide suitable guidelines and to lay down policy matters in respect of information dissemination, there should be a high level advisory committee comprising people having keen interest and experience in communication activity. The Vice-Chancellor should be the chairman of such a committee with the chief of communication centre being the Member-Secretary. The committee should meet periodically and review the work as well as suggest future action.

In view of the importance of information, education and communication in the area of health sciences, it is high time that all health institutions and health universities in India plan for establishment of fullfledged communication centres. The University Grants Commission should also consider funding this important activity liberally.

Training Programme for Technical Teachers

The Academic Staff College of Himachal Pradesh University conducted a 3-week Induction Training Programme, under the auspices of All India Council of Technical Education, at Regional Engineering College, Hamirpur. The programme aimed at improving the teaching competencies of teachers in technical education. It also emphasised personality development, broadening the outlook of teachers, and improving awareness about technical education and its role in solving societal problems.

Inaugurating the programme, Dr R.L. Chauhan, Principal, Regional Engineering College, Hamirpur, said that the teachers engaged in imparting technical education had higher responsibility of developing effective technical manpower. They were expected to meet the requirement of society for relevant R&D, and give desired direction to the national priorities. He called upon the teachers to develop themselves to be productive scholars, innovative scientists and responsible citizens.

Prof. M.K. Sharma, Director, International Institute of Management Studies, H.P. University, in his keynote address, said that technology was shaping our life. The re-engineering processes in Indian industry had been initiated by globalization, privatization and liberalization. Total Quality Management was to be implemented in the educational institutions in order to cater to the quality requirements and specifications of Indian industry, he added.

Highlighting the need for organizing Induction Training Programmes for technical teachers, Dr. Yoginder Verma, Director, Academic Staff College, said that the contemporary society expected technical teachers to meaningfully contribute to economic development of the country. The revolution in information technology had provided both challenges and opportunities for teacher development. For becoming effective teachers, they had to acquire certain teaching conceptions, knowledge, skills, attitudes and values, he added.

The contents of the programme were selected within the framework of AICTE guidelines and participants' requirements. The process of unfreezing, changing and refreezing was utilized. A package of selected readings was provided to the participants on various aspects of teaching related to technical education.

The highlights of the programme included workshop on learning styles, creativity and professionalism of teachers, brain storming, team teaching, communication game, role playing, self-evaluation, mutual evaluation, filming teaching by participants, team building exercise, etc. Attempts were made to familiarise teachers with the teaching environment and sensitize them to the teaching situations. Participants were assisted in identifying their strengths and weaknesses and bringing about certain personality improvements.

During the programme, a workshop on Value Based Education was organized under the guidance of Prof. Yoginder Verma. The participants strongly felt the need for introducing value based education at school, college, university levels as well as in various training programmes organized by government and non-government agencies. It was also realized that deterioration in values was the outcome of multifaceted problems in the society. Therefore, a multi-dimensional approach including integration of values in the text curriculum & co-curricular activities and also introduction of the study of values as a separate subject of study was required.

Sh. C.R.B. Lalit, Registrar, H.P. University, in his valedictory address, said "The greatest challenge in teaching profession is to remain well informed and live with changing technology of information. The rapid developments that have taken place in recent years in the field of information technology, have paved the way for revolutionary changes in higher education in terms of both methodologies and concepts. Evidently, if the breakthroughs in information technology are to be fully-taken advantage of, then there have to be major changes in our policies regarding teaching, research and educational administration. A corollary is that there has to be a revamping of the infrastructure and appropriate changes in procedures and methodologies".

IUCAA Foundation Day Lecture

Professor Suma Chitnis, Director, J.N. Tata Endowment for the Higher Education of the Indians, delivered the Eighth Foundation Day Lecture at the Inter-University Centre for Astronomy and Astrophysics, Pune. Her topic was : Crisis in Higher Education.

Welcoming her to IUCAA, the Director mentioned that with a distinguished career at the Tata Institute of Social Sciences and as Vice-Chancellor of the S.N.D.T. Women's University for six years and with her other involvements in educational activities, Prof. Suma Chitnis was eminently qualified to talk on this topic.

In her lecture, Prof. Suma Chitnis referred to several instances which were symptomatic of the serious trouble brewing in the sphere of higher education in the country. This was evident, she said, in the breakdown of the system in the performance of basic tasks such as admissions, framing of syllabi, conduct of examinations, declaration of results, etc. These visible failures were only surface tensions symptomatic of a much deeper crisis in the system.

She traced the origins of the crisis to several factors, including a much too rapid expansion of higher education after India's independence, the many new and difficult functions being imposed on the system that had been designed with very different objectives, the conflict in perceptions of a merit oriented old system and a new egalitarian system trying to assert itself, and the progressive utilization of the system towards political ends.

She stressed that the crises were found in other countries also and their origins and motivations were not necessarily the same as here. However, so far as India was concerned she felt strongly that there was need for enlightened and educated masses to speak out and take more than a passive role in shaping the country's educational scenario. She reminded the audience that in the pre-independence India, public dialogue with the government used to take place and had been effective. She hoped for a similar course of action which was urgently needed to halt and reverse the declining standards of higher education.

Reservations for Women

The Population Education Resource Centre of Lucknow University recently organised a Panel Discussion on "Reservations for Women". Prof. Bhoomitra Dev, Prof. & Head, Department of Zoology, Lucknow University and Ex-Vice-Chancellor, Gorakhpur and Rohilkhand universities presided.

Dr. J.V. Vaishampayan, Director, PERC and Centre for Adult, Continuing Education and Extension, Lucknow University, in his welcome address, explained the objectives of the discussion and the urgency to discuss the issues in a non-partisan way.

Mrs. Shalini Mathur, Secretary of Suraksha, a women's organisation of Lucknow, put forth a strong case for making reservations for women in legislature on the ground that the present political system did not allow them adequate representation. In the absence of reservation it became difficult for them to compete with the 'man and muscle power of men', she added. She cited the experiences of panchayat elections to say that it had done a great deal to bring out the rural women from their homes and make them important partners in decision making.

Prof. Yashvir Tyagi of the Department of Economics pointed out that reservations for any class *per se* was an instrument which was inequitous in nature. He dubbed the cry for reservation by politicians as a crude attempt to hide their failures in solving the basic problems of women's development. Dr. Vibha Avasthi, Principal, Navyug Kanya P.G. College, Lucknow advocated the need for an integrative approach in solving the problems of women. Mr. Atul Chandra, Senior Editor, the Pioneer, illustrated the example of Iceland where women had formed a political party of their own to solve their problems. He stressed that instead of reservations, there was a greater need for empowerment of women.

Prof. Bhoomitra Dev, the Panel Chairman, in his concluding remarks, pleaded for an evolutionary approach to bring about desirable social changes rather than revolutionary measures which caused disharmony in the society. He opined that it was possible to use reservation alongwith maintaining excellence and merit to further the cause of women's development.

Workshop on Question Bank in Home Science

St. Joseph's College for Women, Visakhapatnam, organised a UGC Workshop on Question Bank in Home Science. 15 delegates from 7 autonomous colleges in

Andhra Pradesh and Tamil Nadu attended the workshop. They represented Nutrition and Textile areas of Home Science.

Mr. K. Gunasekharan, who presided, explained the evolution and objective of the workshops on Question Banking being organised in different autonomous colleges of South India. Dr. Showry, Principal of Dr. V.S. Krishna Government College, in his inaugural address, opined that Home Science was not getting the recognition it deserved because of the misconception of the common man about Home Science. Though it was a socially relevant and practical course, it was in danger of becoming extinct like Sanskrit since Home Scientists were not giving enough importance to developing people's awareness to the usefulness and practicality of the course. He exhorted the Home Scientists to discuss ways and means of popularising the course so that more and more people of both sexes could benefit from it.

The topics deliberated at the workshop included (i) Taxonomy of educational objectives; (ii) Different types of questions; and (iii) Prevalidation of items and questions. The delegates were divided into 3 groups to deal with 2 areas of Nutrition and one of Textile. They evaluated the questions for its English structure, objective level, level of difficulty, type of question/item and assigned it a code number according to the pattern of coding developed by the resource person Prof. Balasubramanyam in consultation with the coordinators Ms. Suguna Kannan (Phase I) and Dr. Sheela Ramachandran (Phase II). In all 8000 questions were collected from the delegates and these were classified according to subject area and type.

Dr. Gopalakrishna Reddy, Vice-Chancellor, Andhra University, in his valedictory address, complimented the college on its effective implementation of autonomy and stressed the role of Home Scientists in microlevel planning.

Refresher Course in Economics

The 4th Refresher Course in Economics was recently organized by the Academic Staff College, Gauhati University. Inaugurating the course, Prof. H.L. Duorah, Vice-Chancellor, Gauhati University, called upon the participants to make full use of the opportunity offered so as to be able to pass on the benefits to the students. Referring to financial constraints of the university Prof. Duorah, emphatically said that 'work more with less resources' should be the slogan of the University.

Speaking on the occasion, Prof. D.P. Barooah, Ex-Vice-Chancellor, Gauhati University, said that teachers should strive for excellence by exposing themselves to newer ideas and concepts. He pointed out that ownership of skill was now a strategic essence and those who possessed this would rule the world.

Dr. K.K. Barman, Professor and Head, Department of Economics, Gauhati University said that refresher course was intended to increase or renew the knowledge particularly in development of modern economics, its scope and methodology, knowledge of the latest developments of economic science.

Dr. P. Sharma, Director of the Academic Staff College, who presided, dwelt upon the need for overall professional development of college teachers to meet the challenges of the times.

38 college teachers from three universities of the North East region participated in the course.

News from Agricultural Universities

ICAR-ODA Collaborative Research Programmes

The Indian Council of Agricultural Research (ICAR) and the Overseas Development Authority (ODA), U.K., proposes to enter into a long-term collaborative research programme for management of renewable natural resources.

A three-day meet between senior research managers of ICAR and ODA held in New Delhi recently identified strategic areas for collaboration. It was decided to go in for a client-oriented demand-led research agenda with emphasis on participatory researches in the areas of rainfed farming system, intensively irrigated high potential production system, fishery and aquaculture, animal production systems for overall rural development.

The ICAR team was led by Dr. R.S. Paroda, Director-General, ICAR and the ODA delegation was headed by Mr. John Barret, Manager, Renewable Natural Resources Research System.

The meet recognised the need

for commissioning a study on the peri-urban agriculture research systems for the National Capital Region (NCR) because of several land and environmental concerns. The output of the ongoing ODA study on Hubli-Dharwar peri-urban interface in Karnataka would also be available in July and would be a guide for the planning of land and water resources in the NCR.

The other areas of strategic importance that were agreed upon included water management, integrated nutrient management, post-harvest technology of tropical fruits and crop improvement through high tech transgenic resistance to Tungro virus and to nematodes in rice and some other crops.

UAS Convocation

Dr. Sanjaya Rajaram, Director of International Maize and Wheat Improvement Center, Mexico, called upon the government policy makers and agricultural scientists to popularise sustainable agricultural methods to meet the country's food requirements. He was delivering the 11th convocation address at the University of Agricultural Sciences in Dharwad recently.

Against the background of estimates that by the year 2020, the country's wheat demand would be around 90 million tonnes, Dr. Rajaram said even if the productivity continued to grow at the current ratio, the country have had to import large quantities of grains to meet the demand.

To achieve self-sufficiency in foodgrains, the country should accelerate its production by 2.5 per cent per year, he said.

Explaining the Mexican centre's role in bringing about the green revolution and its impact on Indian agriculture, Dr. Rajaram said the country's wheat production between 1967 and 1980 went up twice as fast as production of all other grains. The contribution of wheat to the total foodgrain production increased from 12 per cent in 1966 to nearly 30 per cent in 1986.

From 1985 to 1987 the wheat production was more than 45 million tonnes. The country's present production stood at 63 million tonnes. The expected production by 2025 would be 95 million tonnes only if modern techniques like restoration of soil fertility, proper water and fertiliser management are put to good use, he opined.

He stressed the need for proper co-ordination between agriculture research and practice. The farmers, researchers, policy makers and field workers will have to play a vital role in eliminating innumerable constraints that plague the agricultural sector today.

Touching on the government's welfare schemes which encourage farmers to adopt modern technology, Dr. Rajaram said productivity could be boosted if the government provided credit, support prices and other inputs on time.

Governor of Karnataka, Shri Khurshed Alam Khan, who is also the Chancellor of the University, presided and conferred 35 gold medals and cash awards besides postgraduate degrees to as many as 380 students.

TNAU to Establish Medicinal Park

The Tamil Nadu Agricultural University proposes to start a medicinal park at the Forest College and Research Institute at Mettupalayam, at a cost of Rs. 8 lakhs. The park will serve as a demonstration plot for farmers and farm science students.

Dr. A. Abdul Kareem, Vice-Chancellor, TNAU, said the project was being undertaken with sanction from the Ministry of Health and Family Welfare, Government of India, New Delhi. When completed, the park would encourage farmers to cultivate economically useful medicinal plants along with trees.

Prof. S. Balaji, Dean, Forest College and Research Institute, Mettupalayam, will be the Principal Investigator and Dr. K. Sivagnanam, Assistant Professor, co-investigator for the new scheme. The college will maintain the farm for five years.

Agricultural Research Awards

The Govt. of Gujarat has initiated the Scheme "Sardar Patel Agricultural Research Award" to the scientists who have developed technology beneficial to the farmers. The Chief Minister of Gujarat, Shri Shankarsinh Vaghela recently gave away the merit Award to the scientists of Gujarat Agricultural University at Gandhinagar. The awards were given in the field of Plant Breeding & Genetics, Agronomy & Soil Science & Agricultural Engineering, Plant Protection, Plant Physiology & Biochemistry, Animal Husbandry & Dairy Science and Horticulture & Agro-forestry. The first award carries a cash prize of Rs. 1.00 lakh while the second is of Rs. 25,000/-. The Govt. is also reported to have decided to give such awards each year on the eve of the Sardar Patel Jayanti Day on October 31.

News from UGC

Countrywide Classroom Programme

Between 8th and 14th March, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

8.3.97

"Sun, Earth, Space, Environment - I : Solar Winds and its Effects on Earth"

"Girl Child Labour : An Unfortunate Reality"

"Necessary Evil : Nickel"

9.3.97

"Theatre Architecture-IX: Kabuki Drama of Japan"

"Odissi : The Art of Expression - I"

"Arboretum : A National Home for Plants"

11.3.97

"New Horizons"

"Head and Neck Surgery of the Parotid Gland"

13.3.97

"Wilde Memories-V"

"MicroBilogical Examination"

IInd Transmission

1.00 p.m. to 2.00 p.m.

8.3.97

"Violence Against Women"

"Understanding Cinema-VII: Sound-II"

"Sports Medicine"

9.3.97

No Telecast

10.3.97

"Neem : The Green Goldmine"

"Classical Mechanics-XIII: Rigid Bodies: Dynamics"

"Horticulture : Ornamental Gardening"

11.3.97

"Thalassaemia : A Genetic Blood Disorder"

"New Interactions in Higher Education"

"Reflection on a Career : Polymer Chemistry"

12.3.97

"The Chinar"

"The Dimension of Technology (Lecture by Dr. Abdul Kalam)"

"Tropical Fig Trees and Pollination"

13.3.97

"Electromagnetic Interference (Pollution)"

"New Horizons"

"Tennesse Williams : An Introduction"

14.3.97

"Symphony in Green"

"Geometric Transformation : Translation"

"Loktak Lake in Peril"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

10.3.97

"अनमोल रत्न"

"पलाश"

12.3.97

"तलाश - 1"

14.3.97

"विद्युत रसायन"

News from Abroad

Training Course on Project Management

The Asian Institute of Technology, Bangkok, proposes to organise a training course on Project Management on 28 April - 6 June, 1997.

The course is designed for all those associated with or involved in project management, be it either the public or the private sector. It aims at improving the project planning, implementation, monitoring and evaluation skills of project planning and executing personnel, engaged in various developmental projects.

In addition, special emphasis will be given on irrigation, agriculture and rural development projects in terms of lectures, case studies, simulations, exercises, field visits and workshop sessions.

The course contents include : (i) Project Selection, Planning and Appraisal; (ii) Project Implementation with emphasis on Project Budgeting, Network Based Planning and Scheduling; (iii) Project Management Information Systems (PMIS); (iv) Project Organisation and Motivation including Systems Approach and Contingency Theory of Management; and (V) Planning-Monitoring-Control Cycle, Types of Project Control and Evaluation Performance Audit Report (EPAR).

Further enquiries may be addressed to : Admission, Continuing Education Center, Asian Institute of Technology, G.P.O. Box 2754, Bangkok, 10501 Thailand.

Indispensable Reading

M.L. Bhatia*

Moid Siddiqui. The Brave New Manager. Delhi, Tata McGraw Hill, 1995. Pp. 200. Rs. 195/-.

The Brave New Manager by Moid Siddiqui is indeed a brave attempt to remind patriarchal bosses, heroic managers, chocolate cream, and stone-age executives (to whom, incidentally, this books is dedicated) that they alone can change the business world by "just changing their mindsets and recognising the new paradigms".

Patriarchy has been and continues to be a principal characteristic of the social structure/system in India, and is evident in all types of organisations, whether government, non-government, industrial or service. Academic institutions are no exception to it. Ask any employee, past or present, he will bear testimony to the presence of patriarchal administrators/managers. Barring mini-scule minority, all organisations have patriarchal bosses — some in greater, and some in lesser numbers.

Castigating patriarchal and heroic managers, Moid, without mincing words, holds the mindsets of such managers responsible for inefficiency and ineffectiveness of organisations. Undeniably, success or failure, winning or losing, all is in the state of mind. The man who ultimately wins "is the man who thinks he can". (The readers would recall that the slogan "I can" has been the main plank of the philosophy of Gujarat Ambuja Cements — a success story).

The author has worked in some premier Indian public sector enterprises and is currently G.M. (HRM) in HMT, Bangalore. The book, besides a Preface and a Foreword by Abid Hussain, has 16 chapters and is based on the experiences, observations and insights of the author which he seems to have developed in the course of his maturation since his childhood. The book is laced with anecdotes, folklore, parables (Indian and foreign), jokes, proverbs, fairytales, etc. For writing this book the author draws inspiration from several sources (Tom Peter, Drucker, Hammer, Senge, Stalk, Nadler, Prahlad, Ohmae, et al.).

Moid traces the roots of Patriarchy to childhood, social and family system, parental and teacher values, and in particular the system of school education. According to him, and rightly so, the early childhood experiences predispose (or condition) the individuals to certain mindsets which later manifest in certain managerial patterns of behaviour in adulthood. It is during childhood that the seeds are sown, he asserts. The children develop what he calls a "teacher syndrome" which is responsible for breeding patriarchy. *The children are happy if the teacher likes them, they are unhappy if he does not.* Intuitively, the children are tempted to reinforce the "teacher likes-me-position." In case they confront "teacher doesn't-like-me" situation, they try to change it into a positive one. Some other characteristics of teacher behaviour are reflected in; 'Do what I say', 'Don't question', 'Talk only when I say', 'Keep quiet when I stare at you' and so on.

Both parents and teachers are the co-author of the life story of child. Hardly are they aware that the words spoken by them are recording the life script of the child. That people are products of their own life scripts is hardly recognised. Human behaviour is a reflection of the data of the events recorded in the past, particularly during the crucial years of infancy. In a way the author has attempted to give a psychoanalytic interpretation of the phenomenon on which we shall delve a little later.

Since the suggestive utterances of teachers and parents tend to discount the child's ability and talents, they only write a loser's script of the child. The author's advice is *Do not discount others, never discount yourself.* That the teacher and boss are infallible is a myth, he says. The pure thoughts of the children are contaminated by stereotype teaching and well settled opinions of their teachers which convert them into conformists. They learn only "how to please the teacher, and how to pass the examinations with minimal efforts. They learn from the peers how to copy when necessary". They learn a lot of tricks and games during their school days which corrupt their creativi-

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Professor of Management, School of Management Studies, Indira Gandhi National Open University (IGNOU), New Delhi.

ty and ingenuity. Imposition of knowledge is mistaken for teaching. Galileo once said: you cannot teach a man anything, you can only help him discover knowledge within himself.

Most of the forced inputs stifle ingenuity and kill the inborn intuitive instincts. He says, "most of the educational systems encourage convergent and vertical thinking". "Children are trapped in the confines of outdated ideas right from the school days". As a result they lose their identity. They try to play safe. They don't want to risk their status, career or job by creating "teacher doesn't-like-me" situation. Since the manager by sheer flattery or sycophancy thrived in his (her) career, got his boss's patronage, and received all benefits (mostly undeserved) — he (she) also expects the same kind of behaviour i.e., flattery/sycophancy from his(her) colleagues/subordinates. He (She) has no hesitation in depriving any of his (or her) colleagues who have the temerity of listening to their inner voices.

Using metaphors employed by Thomas Harris in his famous book "I' am Okay - you're Okay", the author tries to explain early childhood experiences in term of: Parent, Adult, Child (PAC). Patriarchal manager's "behaviour is dominated by his Child which through the contaminated Adult, manipulates other people to his own ends". With rational faculty of mind of patriarchal bosses contaminated, they indulge in some sort of ego-seduction.

Moid's diagnosis is that in patriarchal environment, conscious efforts are made to cut the roots of *constructive dissent* which in turn has the effect of stifling creativity. How can there be a healthy organisation without creativity? Patriarchal environment breeds sycophancy. The author's message to managers, therefore, is "be bold". Boldness requires *courage and not arrogance*. Intellectual dignity lies in intellectual integrity, he says. What the author arraigns is not bureaucracy or bureaucrats but bureaucratic style of running the enterprises.

The behaviour of patriarchal bosses reflects the assumptions akin to those of Theory X: Top-down approach; that the person in power or position is superior, that one who is not is inferior; that self-expression is the sign of insubordination; that people are only instruments to achieve objectives desired by the boss. The typical statement is "I will take care of you so long as you do what I say. Your career is safe in my hands". The boss little realises that by his behaviour he is causing incalculable decadence of the organisation. Employees become experts in manipulating relationships. Even in maintaining personal relationships they become calculative to the extent of deciding whether or not to go for evening walk with a particular colleague or take lunch with him, or when to discontinue any of such associations.

Escapism and adoption of a path of least resistance are the two pillars of the style of the functioning of such a manager (to call him a leader is to do injustice to the word). The patriarchal and heroic managers are devoid of vision which is otherwise so imperative for success of the organisation. It goes without saying that many of the most globally successful Japanese companies — Honda, Sony, Matsushita, Canon — reached the pinnacle of glory because of the vision of their leaders.

Heroic managers spend their energies in image building or self-projection. They tend to present themselves larger than life, little realising that one is never perceived by others as per one's own projection. People are enlightened enough these days; nobody can really be fooled by a false beard. It is better to be admired than to be liked. The heroic manager causes incalculable damage to the organisation by stretching his arms too far and flexing his muscles too frequently. He over-counts his professional strengths and potentials and never tires of blowing his own trumpet or beating his drums. He is a team breaker and a block maker. On the pretext of recognising competence, "such a manager looks for loyalties, and starts commanding appeasement, grossly misconceiving it as a professional regard". "A heroic manager is a *narcissist*, he is a self-obsessed person, a self-impressed fellow who always over-rates himself and under-counts others". Unencumbered by moral and social sensitivities, the narcissists are sharks who are fuelled by their mythical self-confidence. They tend to remain in the scene as central figures. Moid suggests two techniques to handle a heroic manager for dealing with their over-enthusiasm; the first is *Creative Aggression* whereby whatever strength he has in him can be utilised tactfully for organi-sational needs, and the second is *Supportive (or Creative) Confrontation* by which his ego-mania (a behavioural disease) can be strongly confronted by lending a latent support to the intellectual part of his total behaviour.

A stoneage manager, according to the author, maintains dual standards. He is very loyal and submissive to his boss, but adopts entirely different and brutal posture while dealing with subordinates. He looks for loyalties in the guise of searching competencies amongst his people. The author lists the usual likes and dislikes of such stone-age managers.

In the context of emerging environment the author draws the attention of the readers to strategies such as establishing a mission, continuing education and training, computer literacy, people empowerment, use of Zen concepts, meditation, creativity, etc. The last one is very important. Without creative climate, the fallopian tubes of the organisation get blocked so much so that nobody may seem to sense the problem, much less diagnose the reasons of its sterility.

Turning now to psychoanalytic interpretation, it can be said that human personality, by and large, is shaped by early childhood experiences, good or bad. A man's adult life is permeated by the residues of the developmental process. The cornerstone of Freudian psycho-analytic theory is the importance given to early childhood development in determining the adult personalty. Though all psycho-analysts agree that early childhood experiences (upto the age of 5 years) are important, yet a number of post-Freudian theorists consider later experiences also to be equally important in determining personalty, as they can have profound effects. Further, it has to be noted that human behaviour is a complex phenomenon. It is not always possible to establish a cause and effect relationship. Human behaviour may be the consequence of multiple causation, multiple forces acting simultaneously.

The implicit assertion that patterns of behaviour, dominant traits, motives and concerns are solely derived from early childhood experiences may not hold true in all cases. The personality structure often emerges as a consequence of interplay between specific social experiences and specific genetically determined biological processes and structures. Very much depends on how the *ego* state of an individual is organised. In psycho-analytic jargon the ego state of a person consists of psychic apparatuses (i.e. *perceptions, memory, motility,* and so on) which enable the individual to perceive, think, and act upon his environment. Besides, it also includes psychic structures of control which result from previous encounters with reality deposited in the *unconscious*. The healthy ego has the capacity to harmonise the potentially conflicting requirements.

Different people respond to social stimuli differently. All children facing "teacher don't-like-me situation" may not be inclined/or be able to turn the situation into a positive one and hence become conformists. The teachers/parents who use rigid and harsh form of discipline on the children, who make their love and approval conditional on unquestioning obedience, who emphasise duties and obligations rather than exchange of affection in their relations, who are overly conscious of distinction of status in their interpersonal relations and are contemptuous of those with lower status are very likely to turn the children into authoritarian personalities, and even with hostile tendencies. It is not only the indoctrination to which the teachers/parents subject the children, but also the manner in which a child "negotiates" the initial phases of his childhood that determines to a great extent his interpersonal relations. The author does not seem to delineate these two developmental processes.

Since the school days of the author, new generations have arrived. Several children belonging to the new generations have been/are being educated in "public" schools in cities and towns. The profile and behaviour of teachers in such schools are vastly different. They are more broadminded, open secular in their outlook, and encourage self-expression among their pupils. They are not averse to criticism. Teachers generally refrain from criticising their students too much lest it should have a negative impact on their personalities. So, circumstances have changed, teachers have changed. Even if Government schools are brought into the ambit, it may not be appropriate to generalise that all teachers are bad, or that they are similar in outlook, and that their pattern of teaching is archaic and questionable. Even in those good "golden" days there used to be teachers who, by their exemplary character, moral values and ideals they upheld, would leave a lasting imprint on the psyche of their pupils — something to be cherished in life.

Since the author has considerable experience in HRM, if some concrete strategies/training programmes had been suggested for tackling the problem of patriarchy in business enterprises, it would have enhanced the usefulness of the book (Maybe, the author attempts this in the subsequent volume). Mere admonitions or slogans are not going to work. Of course, the ideal solution is to nip the problem in the bud i.e. by creating a congenial or liberal environment in the school system. But this is easy said than done. India has not been able to make any worthwhile dent on the primary education front which has been in shambles and continues to be neglected. It must be said that the school system in "real"

India is still, by and large, the same; it has changed very little.

There are a few printing errors/omissions (e.g. on pages 32, 33, 188, 200, 201) which could be taken care of in the next reprint. Though a discernible reader cannot miss several repetitions, yet at the end of the day one feels that some amount of repetition/reiteration perhaps is unavoidable to assert the points that the author wants to make.

The author has extensively quoted from various books. It would have been helpful if the sources had been indicated as footnotes. The readers, after coming across certain quotations, may be tempted to read more about the matter in the original sources.

Incidentally, Moid says that he was fortunate not to have had patriarchal or heroic managers as his bosses. Paradoxical as it may seem, the statement is difficult to accept, much less believe it. Unless one experiences the harsh realities or pricks of life himself, and unless the cords of sensitivities of human mind are struck, a spark does not ignite for this kind of work. (Incidentally, Moid's biographical sketch points to his interest in poetry.)

Notwithstanding the above, *The Brave New Manager* indeed is a laudable attempt. It is an interesting, stimulating, light and absorbing reading. Once you start reading, it is a non-stop journey; no station/halts in between; you want to reach straight to the last page. An indispensable reading for practising and potential managers, and management students who will find the book an exciting and provocative one. The book should find its place in all corporate libraries and Management institutions.

SAHA INSTITUTE OF NUCLEAR PHYSICS

Sector-I, Block AF, Bidhannagar,
Calcutta-700 064

No.SINP/R/Advt/RF/2/97

JUNIOR RESEARCH FELLOWSHIP IN PHYSICS AND BIOPHYSICAL SCIENCES (1997-1998 SESSION)

Applications are invited for Junior Research Fellowship at the Saha Institute of Nuclear Physics. The Institute is engaged in research in many front line areas of Physics and Biophysical Sciences such as **Physics:** Accelerator-based Nuclear Physics, Theoretical Nuclear and Astro Nuclear Physics, High Energy Physics, Mathematical Physics, Solid State Physics, Low Temperature Physics, Surface Physics, Physics of Soft Condensed Matter, Plasma Physics and Magnetic Confinement, Atomic and Molecular Spectroscopy, etc;

Biophysical Sciences : Structural Biology and Biomolecular Spectroscopy, Macromolecular Crystallography, Cell Biology and Ultrastructural Research, Molecular Genetics, Membrane Biophysics, Genetic Toxicology, Radiation Chemistry and Biology, etc.

Eligibility : (a) **Physics**: Master's degree in Physics. Candidates with Master's degree in Applied Mathematics/Engineering Sciences or M.Tech with *good background in Physics may also apply.*

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Admission Test : *Admission will be on the basis of academic records and* performance in the admission test consisting of a written examination and interview which will be held in the month of May, 1997. The session is to commence in August, 1997.

Travelling allowance : Candidates called for the admission test will be reimbursed return second class Railway fare from their normal place of residence and will be paid DA as per the rules of the Institute.

The First year of the Fellowship : Selected students have to successfully complete a one year course, the Post M.Sc. Associateship Course, prior to pursuing doctoral research at the Institute.

Fellowship and Hostel Accommodation : The fellowship is Rs. 2700/- p.m. Limited hostel accommodation will be available.

How to apply : Application forms will be available from the Establishment Officer, Saha Institute of Nuclear Physics, Sector-I, Block-AF, Bidhannagar, Calcutta-700 064. To obtain application forms please send a self addressed envelope (25cms x 11cms) by 15th March, 1997. Do not affix any stamp on the envelope. Mention the stream (Physics/Biophysical Sciences) *in which you want to apply. Completed application forms must reach* the Establishment Officer, SINP by **31st March, 1997.**

D.N. Bhattacharjee
REGISTRAR

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Gaddagimath, Rudrayya Basayya. **Information management programmes for users in Indian agricultural libraries : An indepth study on resources, curriculum design and development of learners, packages.** Karnatak. Dr S L Sangam, Reader, Department of Library and Information Science, Karnatak University, Dharwad.

2. Krishna Reddy, Sathinesi Hari. **Information requirements of the professionals working in the National Institute for the Disabled with special reference to mental handicap in India.** Karnatak. Dr C R Karisiddappa, Prof, Department of Library and Information Science, Karnatak University, Dharwad.

3. Marolia, P V. **Exepertise and qualities required by special library staff in India.** SNDT. Dr V A Kamath, A Wing, Flat No 9, Minee India, Mahakali Caves Road, Andheri East, Mumbai

4. Mishra, Rabinarayan. **Citation analysis of doctoral dissertations in Library and Information Science accepted by the universities of Orissa and Manipur till 1993 : A comparative study.** Sambalpur Dr Krushna Chandra Panda, Lecturer, Department of Library and Information Science, Sambalpur University, Jyoti Vihar, Burla.

5. Misra, Prafulla Kumar. **Collection development in university libraries : Policy and procedures, a study of university libraries in the state of Orissa.** Berhampur. Prof P Soma Raju, Head, Department of Library and Information Science, Andhra University, Waltair.

6. Sahoo, Kailash Chandra. **Literature use pattern in Bio Sciences; Ecology, Bio-Chemistry, Bio-Physics, Physiology at the Universities of Sagar and Sambalpur : A bibliometric study based on the Ph D Theses, 1975-90.** HS Gour. Prof R G Prasher, Department of Library and Information Science, Dr Harisingh Gour Vishwavidyalaya, Sagar.

7. Sujatha, G **A study on resorurce sharing and net working of university libraries in Andhra Pradesh.** Andhra.

Psychology

1. Balhara, Lokesh. **Development pattern of language lateralization among monolinguals and early-late bilinguals.** Dayanand Rohtak. Dr Rajbir Singh.

2. Jhansi Rani, N. **Meditation and performance on attention related cognitive tasks.** Andhra.

3. Mishra, Mridula. **Compatibility of somatic inkblot series-II with the Rorschach test in normal, neurotic and schizophrenics.** BHU. Dr C B Dwivedi, Reader, Department of Psychology, Banaras Hindu University, Varanasi.

4. Rawat, Daisy. **Stress coping strategies and psychological well being : A study of school teachers.** HP.

5. Shams, Giti Khanam. **A comparative study of structural functional social support and psychological risk factors in coronary heart disease and gastrointestinal disorders.** BHU. Prof B S Gupta, Head, Department of Psychology, Banaras Hindu University, Varanasi.

6. Shrivastava, Pramila. **A comparative study of stress and coping styles among Type-A and Type-B teachers.** Ghasidas. Dr P K Tiwari, D P Vipra College, Bilaspur.

7. Singh, Jaya. **Relationship of family environment with personality hardiness among the Indian and American students.** HP.

Sociology

1. Ajay Kant. **Agrarian mobilization in Western Uttar Pradesh : A study of the Bhartiya Kisan Union.** JNU. Dr Zoya Hasan, Assoc Prof, Centre for Political Studies, Jawaharlal Nehru University, New Delhi.

2. Chaturvedi, Sushma. **Hindu pariveron ke parivartit pratiman : Bilaspur, M P, nagar ke vishesh sandarbh mein.** Ghasidas. Dr (Smt) Abha Tripathi, Govt Girls P G College, Bilaspur

3. Chauhan, Arun Singh. **Socio-economic consequences of environmental degradation in Lillooet.** Durgavati. Dr C S S Thakur, Head, Department of Sociology, Rani Durgavati Vishwavidyalaya, Jabalpur.

4. Jha, Amarendra. **Cultural impact of Satellite foreign T V : A comparative study of rural and urban social settings in Delhi.** JNU. Dr Anand Kumar, Assoc Prof, Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi.

5. Kathoch, Anoop. **Continuity and change in the pettern of family and kinship among the Gaddis of Himachal Pradesh.** Garhwal. Dr D P S Khanna.

6. Mohal, Snehalata Manikrao. **Study of library as social system.** Marathwada. Dr B L Joshi, Reader and Head, Department of Sociology, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

7. Nain, Krishna. **Women in the urban informal sector : A case study of Rohtak City in Haryana.** Dayanand Rohtak. Dr B K Nagla, Reader, Department of Sociology, Maharshi Dayanand University, Rohtak.

8. Nayyar, Kusum. **Kanpur Nagar mein sewarat Mulsim mahilayon kee parivarik paristhiti : Ek samajshastriya adhyayan.** Garhwal. Dr J P Pachauri.

9. Pansome, Phramaha Kambhao. **Some aspects of social change in the rural community of Thailand : A sociological study of changing style of life of rural people.** BHU. Prof S Tripathi, Head, Department of Sociology, Banaras Hindu University, Varanasi.

10. Sharma, Neeta. **Shikshit Hindu mahilayon kee badalti dharmik manyatayen : Ujjain Nagar per adharit ek samajshastriya anusandhan.** Vikram. Dr C S Damade, Prof, Department of Sociology, Madhav College, Ujjain.

11. Singh, Meera. **Inter caste marriage : A study in sociology.** BHU. Dr K D Dwivedi.

12. Singh, Raghuraj Kumar. **Adoption and diffusion of technology : A sociological study of Sultanpur District.** BHU. Prof S Tripathi, Head, Department of Sociology, Banaras Hindu University, Varanasi.

13. *Singh, Ram Prakash.* **Nagariya parivesh mein anusoochit jatiyon kee samajik dashayen : Varanasi Nagar ke malin bastiyon per adharit ek samaj vaigyanik adhyayan.** BHU. Dr S R Yadav.

14. Singh, Tej Bahadur. **Role of public development administration in rural transformation : A sociological study based on Azamgarh District, U P.** BHU. Dr J K Tiwari, Reader, Department of Sociology, Banaras Hindu University, Varanasi.

15. Suresh Chandra. ***Faizabad Janpad mein haspatalon ke*** **akar evam chikitsak rogi antah kriyaon ke sambandhon ka adhyayan.** Garhwal. Dr J P Pachauri.

16. Tiwari, Asha. **Gramin saksharta aur saksharta abhiyan : Ujjain Jile ke vishesh sandarbh mein ek samajshastriya mulyankan.** *Vikram. Prof N L Sharma, 226, Sethi Nagar, Ujjain.*

17. Tiwary, Manoj Kumar. **Video journalism in Delhi : A study in the sociology of communication.** JNU. Prof J S Gandhi, Assoc Prof, Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi.

18. Yadav, Manisha. **Condition of women industrial labour in India.** Dayanand Rohtak. Dr S R Ahlawat, Lecturer, Department of Sociology, Maharshi Dayanand University, Rohtak.

Anthropology

1. Danmora, Arvind Kumar. **Uttarkashi mein bhookamp apada : Prabhav evam prabandhan ka tulnatmak adhyayan.** Garhwal. Dr R S Negi.

2. Francis, Baby. **Emergence of a small town in tribal Wynad : A study of Pulpally.** Calicut. Dr B Ananda Bhanu, Head, Department of Anthropology, Calicut University Centre, Palayad, Tellicherry.

3. Mangla, A P. **Kinship and land tenure system among the jats : A case study.** Garhwal. Dr P C Joshi.

4. Shajahan Sardar. **The Koirengs of Manipur : A study on their economy and development.** Manipur. Dr W Nabakumar Singh, Department of Anthropology, Manipur University, Imphal.

Social Work

1. Sarikar, Chidanand Dundappa. **Psycho social correlates of family and absenteeism in industry.** Karnatak. Dr S F Pujar, Prof, Department of Social Work, Karnatak University, Dharwad.

Political Science

1. Adhikari, Yagyan Prasad. **Foreign policy perspectives of Nepali Congress, 1947-90.** BHU. Dr P D Kaushik, Department of Political Science, Banaras Hindu University, Varanasi.

2. Alawa, Sunil Kumar. **Bharatiya swadheenata andolan mein adivasiyon ka yogdan : Paschim Nimar ke sandarbh mein.** Vikram. Dr Mahesh Maheshwari, Department of Political Science, Vikram University, Ujjain.

3. Anwar Alam. **Role of religion in state polity : A comparative analysis of contemporary Egypt, Iran and Saudi Arabia.** JNU. Prof K R Singh, Centre for West Asian and African Studies, Jawaharlal Nehru University, New Delhi.

4. Awasthi, Alpana. **Dakshin Asiai Kshetriya Sahyog Sangthan aur Bharat.** *Vikram. Dr Om Prakash Gupta, Department* of Political Science, Govt College, Shajapur.

5. Bhagwati Prasad. **Garhwal mein Panchayati Raj sansthayon mein netritva : Simant Janpad Chamoli ke sandarbh mein ek adhyayan.** Garhwal. Dr R N Gairola.

6. Bharathi, M. **Methodology of social enquiry : A Marxian perspective.** Hyderabad. Prof G Haragopal, Head, Department of Political Science, University of Hyderabad, Hyderabad.

7. Bhowmik, Bimalendu Nath. **Public policy in India : A study of the Scheduled Castes and Scheduled Tribes.** NBU. Dr M Chakraborty, Department of Political Science, University of North Bengal, Raja Rammohunpur, District Darjeeling.

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Economics

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Education

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12. Jayaram Reddy, T. **Accounting practices of lease financing companies : A study of select companies.** Osmania.

13. Kanetkar, Megha Prashant. **Vidarbhateel grahak chalvalicha vishleshanatmak abhyas.** Nagpur. Dr Sudhir N Bodhnakar, Head, Department of Commerce, C P and Berar College, Nagpur.

14. Karam Pal. **Direct tax reforms in India : A study of Income Tax Law since 1961.** Dayanand Rohtak. Dr S S Chahal, Reader, Department of Commerce, Maharshi Dayanand University, Rohtak.

15. Karandikar, Amarja. **Assessment of effects of advertising on consumers in India and measures of protection.** SNDT. Dr G B Nagporewalla, Department of Commerce, Shreemati Nathibai Damodar Thackersey Women's University, Mumbai.

16. Lasune, Vishwanathrao Suryakant. **A study of management dynamics of high schools with special reference to Aurangabad City.** Marathwada. Dr B B Pahurkar, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

17. Maheshwari, Mahesh Kumar. **Industrial sickness in West Bengal : A study in managerial and socio-economic aspects.** Burdwan. Dr R N Banerjee, Prof (Retd), Department of Commerce, University of Burdwan, Burdwan.

18. Mishra, Suryakant. **Chhattisgarh mein sahkari adhikoshan sansthaon kee gatividhiyon ka mulyankan, 1983 se 1993 tak.** Ravishankar. Dr D N Mehar, Prof, Department of Commerce, Govt Digvijai College, Rajnandgaon.

19. Mohanty, Bijaya Kumar. **Financing agriculture in Orissa : A study on the role of Gramya Banks.** Utkal.

20. Munat, Suresh Chandra. **Ujjain Sambhag ke chayanit rasayanik audyogik ikaiyon ka arthik adhyayan.** Vikram. Dr B L Jain, Prof, Department of Commerce, Govt College, Ratlam.

21. Narayan, Vichitra. **Role of nationalized banks in the industrial development of Garhwal Region.** Garhwal. Dr A K Das.

22. Nikam, Ramhari Sopan. **A study of managing cost and productivity of cooperative sugar industry in Solapur District.** Shivaji. Dr B B Ekshinge, B P Sulakhe College of Commerce, Barsi, District Solapur.

23. Paila, Mohan Subbarao. **Housing development and finance in Maharashtra : An evaluation study of selected housing finance organisations.** Shivaji. Dr V M Chavan, Director, Institute of Management, Kadamwadi, Kolhapur.

24. Patil, Sudhir Appaji. **A study of managerial aspects of cooperative spinning mills in Ichalkaranji.** Shivaji. Dr P S Rao, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

25. Pawar, Mahadev Gangaram. **Raising and utilisation of finances by cooperative sugar factories in Satara District.** Shivaji. Dr S G Bhanushali, 50, Mahalaxminagar, Kolhapur.

26. Pradeep Kumar. **Meerut Mandal mein zila sahkari bankon ka ek adhyayan.** Garhwal. Prof K S Negi.

27. Ruma, R. **Training policy and programmes in the State Bank of Hyderabad : An evaluative study.** Osmania. Prof P Subramanyam, University College of Commerce and Business Management, Osmania University, Hyderabad.

28. Shalgaonkar, Hanmant Dattatray. **Working of urban cooperative banks in Satara District, from 1980-81 to 1990-91.** Shivaji. Dr C S Shreshthi, Chh Shahu Central Institute of Business Education and Research, Kolhapur.

29. Singh, Rajeev. **Madhya Pradesh ke pichhre kshetron mein vittiya abhiprernayon ka udmita vikas per prabhav : Mandla Zile ke vishesh sandarbh mein.** Durgavati. Dr N C Tripathi, G S College of Commerce and Economics, Civil Lines, Jabalpur.

30. Singh, Rajesh Kumar. **Monetary compensation and motivation of BHU employees.** BHU. Dr S Chandra, Reader, Department of Commerce, Banaras Hindu University, Varanasi.

31. Srinivas, B. **Economic transition of Nalgonda District.** Osmania. Prof D Obul Reddy, Department of Commerce, Osmania University, Hyderabad.

32. Tandekar, K L. **Chhattisgarh mein charma udyog ka vikas evam sambhavnayen, 1985 se 1995 tak Madhya Pradesh kee katipaya anya ikaiyon ke tulnatmak pariprekshya mein.** Ravishankar. Dr D N Mehar, Prof, Department of Commerce, Govt Digvijai College, Rajnandgaon.

33. Vadgule, S M. **Cost profitability and owners/passengers satisfaction : A case study of Auto Rickshow Passengers Transport, APT business.** Marathwada. Dr V S Shitole, Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

34. Wail Abdul Raheem Salim. **Marketing strategy of electronic goods with special reference to television in Nagpur District.** Nagpur. Dr V K Upagade, Reader and Head, Department of Commerce, S B City College, Nagpur.

Home Science

1. Dedhia, Ela M. **A study of employment generating activities for women in the garment industries.** SNDT. Dr B Tavawalla, Head, Department of Textiles and Clothing in Home Science, Shreemati Nathibai Damodar Thackersey Women's University, Juhu Campus, Mumbai.

2. Gir, Sophia. **Role analysis and it's relationship with marital adjustment of couples in the beginning stage of family life cycle.** Rajasthan Agri. Dr (Mrs) C Dave, Assoc Prof, Department of Child Development, College of Home Science, Udaipur.

3. Harpinder Kaur. **Impact of women's employment on family environment.** PAU.

4. Pandey, Sangeeta. **A study of status of child survival strategies in a rural area of Varanasi.** BHU. Prof (Mrs) J Tandon.

5. Prasad, Binita. **Evaluation of MCH services in Chiraigaon Block and related KAP study of beneficiaries.** BHU. Prof V M Gupta, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Sharma, Swati. **Effect of nutrition on mental and motor development process of children, 0-6 years of Gaddi tribes in Kangra Valley of Himachal Pradesh.** HP Krishi. Dr Manoranjan Kalia, Department of Food Science and Nutrition, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

7. Shendre, Shubhangi Purushottam. **Nagpur jilhyatil andh grihanichya : Grikryachya paddhti ani samasya yanche adhyayan.** Nagpur. Dr Minakshi Tarnekar, Head, Department of Home Economics, Smt Binzani Mahila Mahavidyalaya, Nagpur.

8. Singh, Meera. **Health communication behaviour of rural women.** BHU. Dr Indira Vishnoi, Reader, Department of Home Science, Mahila Mahavidyalaya, Banaras Hindu University, Varanasi.

9. Sinha, Amrita. **A psychological study of the children of working and non-working mothers.** BHU. Dr (Smt) P Srivastava, Reader, Department of Home Science, Mahila Mahavidyalaya, Banaras Hindu University, Varanasi.

10. Tripathy, Bandana. **Women, work and household trends and perspectives of urban living in Bhubaneswar.** Utkal.

11. Vijaya Kumari, J. **The child care practices in the rural areas.** Bangalore. Dr Indira Krishna, Prof, No 46, Sri Sharada Sevika Mandali Trust, Ranga Rao Road, Shankarapuram, Bangalore.

Management

1. Dhaka, Brham Pal. **Impact of productivity linked reward systems, P L R S on the service sector.** Dayanand Rohtak. Dr O P Goyal, Prof, Department of Business Management, Maharshi Dayanand University, Rohtak.

2. Dubey, Sanjay. **An appraisal of marketing practices of South Eastern Coalfields Limited, Bilaspur.** Vikram. Dr Nageshwar Rao, Director, Pt Jawaharlal Nehru Institute of Business Management, Vikram University, Ujjain.

3. Narendranathan. **Market rate of return : A case study.** Karnatak. Dr K S Daniel, Prof and Chairman, Department of Commerce, Karnatak University, Dharwad.

4. Prasad, T. **Organisational culture and organisational commitment : A study of managers in select public and private sector organisations.** Osmania. Prof E G Parameshwaran, P-3, Osmania University Quarters, Hyderabad.

5. Rahman, Zillur. **Computerised management information systems in large scale private sector Indian manufacturing companies.** AMU. Prof S M Qzair, Head, Department of Business Administration, Aligarh Muslim University, Aligarh.

6. Venkata Ramana, V. **Diversification programmes and strategies of Indian Industries : A study of select undertakings.** Osmania. Prof V Madan Mohan Reddy, Department of Business Management, University College of Commerce and Business Management, Osmania University, Hyderabad.

Guiding Research in International Relations: Workshops Four and Five

With a view to enhance the study of international relations in India, the ASRC and the host universities are organising several workshops for Research Guides. They are designed to provide an opportunity for those guiding research leading to M.Phil and Ph.D. degrees in the field of international relations (broadly defined) to exchange ideas on research topics, guidance, source materials, writing, etc.), to discuss procedures and regulations for registration, and also to acquaint themselves with recent trends of research and published work in the field. Earlier Workshops were held at Hyderabad, Baroda and Udaipur. The fourth and fifth are to be held in February and May 1997 respectively.

Recognised research guides who have guided/registered at least two M.Phil/Ph.D. scholars in international relations under their supervision are eligible. Selected participants are entitled to round trip train fare by first class/AC sleeper, incidental expenses and local hospitality on the campus of the host university.

If interested, please send your latest C.V. along with the titles of the dissertations completed under your guidance, the year(s) of the award of M.Phil/Ph.D. degrees and a list of scholars currently working with you, along with their research topics and registration dates at least one month in advance to the following :-

Dr. B. Ramesh Babu, Senior Academic Fellow (IR)
American Studies Research Centre, Hyderabad 500 007
Tel: 7018608/7018609 Fax: 040-7017114
E.mail babu @ asrc hyd.ernet.in

ANNAMALAI UNIVERSITY

MBBS/BDS/BPT/BOT/B.Sc (Nursing) and B.Pharm Degree Courses
Entrance Examinations - 1997

NOTIFICATION

ROC No. 1003/K2/Advt. - 3/97

Annamalainagar,
20.02.1997.

A common Entrance Examination will be conducted in selected centres in Tamil Nadu by the Annamalai University for the Candidates who intend to seek admission for the following SELF-FINANCING COURSES in the University for the year 1997-98.

COURSES OFFERED

1) M.B.B.S 2) B.D.S. 3) B.P.T. 4) B.O.T.

5) B.Sc. (Nursing) and 6) B.Pharm.

Appearance in the Entrance Examinations is COMPULSORY FOR THE CANDIDATES seeking admission to the above courses. These Entrance Examinations are for the candidates belonging to TAMIL NADU AND ALSO OTHER STATES IN INDIA.

This Notification relates only to the Entrance Examinations. Candidates are advised to refer to separate notification to be issued around second week of May 1997 by the University inviting applications for admission to the various Courses.

Selection to various courses will be governed by the procedures laid down by the University.

GENERAL INSTRUCTIONS

Candidates who are appearing for Higher Secondary or Equivalent qualifying examinaitons during March-May 1997 and Candidates who have already passed HSC or other equivalent qualifying examinations are eligible to apply for these entrance examinations.

The Entrance Examinations will be conducted in the following schedule and subjects:**

Paper 1 : Biology (Botany & Zoology)
(02-05-97 Forenoon)

Paper 2 : Physical Sciences (Physics & Chemistry)
(02-05-97 Afternoon)

** (Questions for the above examinations will be based on the revised syllabi for the second year of the Tamil Nadu HSC (Academic) Course 1996-97)

Admission will be made on the basis of marks obtained in the relevant subjects in the qualifying examinations (HSC or equivalent) and in the Entrance Examinations, besides an interview to be conducted by the University.

The selection will be made on the basis of aggregate marks obtained in i) Qualifying Examination - 200 ii) Entrance Examination - 100 and iii) Interview - 30

COST OF APPLICATION FORM

The Cost of application form is — Rs. 80/-

METHOD OF PAYMENT

Application forms can be obtained IN PERSON by CASH Payment at the University Cash Counter on all working days.

To get application form BY POST send a requisition letter along with a *Demand Draft for Rs. 80/- drawn in favour of the "THE REGISTRAR, ANNAMALAI UNIVERSITY, ANNAMALAINAGAR - 608 002" obtained on or after 24.02.97 from INDIAN BANK/BANK OF MADURA LTD./ STATE BANK OF INDIA, payable at Annamalainagar or Chidambaram and a self addressed kraft envelope of size 35cm x 15cm with stamps affixed to the value of Rs. 5/-. DRAFT FROM ANY OTHER BANK WILL NOT BE ACCEPTED. Candidates are advised to write their name and address on the reverse of the Demand Draft.*

Application forms will be sent only by ORDINARY POST and the University will not be held responsible for non-receipt of application forms.

Application form will be issued from	-	28.02.97
Last date for issue and receipt of filled in application form in the University	-	31.03.97
Date of Entrance Examinations	-	02.05.97 (FN & AN)

Dr. PL. Sabarathinam
REGISTRAR

CLASSIFIED ADVERTISEMENTS

MAR ATHANASIUS COLLEGE ASSOCIATION

KOTHAMANGALAM-686 666
KERALA

Applications are invited for the following post in the Mar Athanasius College of Engineering, Kothamangalam.

Lecturer in Economics : 1

Qualification : 1st class Masters Degree in appropriate branch of study of the Mahatma Gandhi University or equivalent.

Qualifications, scale of pay and age will be as per norms prescribed by the AICTE, Mahatma Gandhi University and Kerala Government.

Application forms and other details can be had from the Principal, Mar Athanasius College of Engineering, Kothamangalam-686 666, Kerala on payment of Rs. 100/- in person or by D.D. drawn in the name of the Secretary, Mar Athanasius College Association, Kothamangalam payable at any scheduled bank at Kothamangalam, with a self addressed envelope 23 x 10 cm affixing postal stamps worth Rs. 10/-. Filled up applications should reach the office of the Secretary, Mar Athanasius College Association, Kothamangalam **within 30 days** of the date of the publication of this advertisement.

Kothamangalam **SECRETARY**
11-2-1997

GOA UNIVERSITY

SUB POST OFFICE GOA UNIVERSITY, TALEIGAO PLATEAU, GOA-403 205

Applications are invited for the following posts in the prescribed form together with copies of certificates and an application fee of Rs. 50.00 (Rs. 25.00 for candidates belonging to SC/ST category) so as to reach the Registrar, Goa University, Sub Post Office Goa University, Taleigao Plateau, Goa-403 206 **within 15 days** from the date of publication of this advertisement. The University reserves the right of accepting/rejecting applications received after the last date specified above.

Prescribed form of application can be obtained in person on payment of Rs. 50/- or by post on payment of Rs. 60.00, by Crossed Demand Draft drawn in favour of the Registrar, Goa University on the State Bank of India, Panaji or Bambolim, or Indian Postal Order or by Challan in the State Bank of India, University Branch, Taleigao Plateau, Goa-403 206.

The minimum qualifications and the scales of pay of these posts are as prescribed by the University Grants Commission from time to time. The minimum and desirable qualifications prescribed for the posts are contained in a Handout to the Candidates, and will be sent alongwith the application forms. For the post of Lecturer, a candidate who has not cleared NET/SET may be considered for temporary appointment, if suitable candidate with NET/SET is not available. The posts also carry allowances as admissible to the Goa State Government Employees. A higher starting pay may be allowed to exceptionally qualified candidates.

Vacancies and Specialisation

Professor - P; Reader - R; Lecturer - L and TO - Technical Officer.

Figures in the brackets indicate number of vacancies followed by specialisation.

FACULTY OF LANGUAGES

Department of English

R (1) : British Literature; Linguistics; English Language Teaching; New Literature in English.

Department of Hindi

P (1) : Aesthetics, Comparative Study, Criticism.

R (1) : Linguistics, Translation, English-Hindi.

L (1) : Medieval Poetry, Drama, Modern Poetry.

Department of Marathi

P (1) : Modern Marathi Literature, Literary Criticism, Linguistics.

L (2).

Department of Konkani

L (2) : Konkani Poetry and Applied Literary Criticism with knowledge of Computer operations in English as well as in Konkani Devanagari script.

Department of French

R (1) : Literary Criticism, French Literature and Linguistics, **Desirable** : Expertise in French-English Translation.

L (1) : French Literature (De-reserved).

Department of Portuguese

L (2) : M.A. Entire/Major Portuguese having Portuguese Language and Literature Papers at M.A. Degree.

FACULTY OF ARTS, HUMANITIES & SOCIAL SCIENCES

Department of History

L (1)

Department of Sociology

P (1) : Classical-modern and Post-modern Theories of Society/Interdisciplinary work in Sociology and Anthropology or allied Social Sciences.

L (1) : Socio-Economic Theories of Development/Social Anthropology/Folklore. (Lien vacancy)

Department of Philosophy

R (2) : Classical/Contemporary Indian Philosophy; Existentialism/Phenomendology; Symbolic Logic, Philosophy of Mind; Philosophy of Science.

L (1)

Department of Political Science

P (1)

R (1)

L (3)

Department of Economics

L (2) : Econometrics, Public Economics, **Desirable** : Expertise in Quantitative Methods.

Centre for Latin American Studies

R (3) : Latin American Economy/Int. Economics.

Latin American Society with emphasis and work done in the field of race relations.

L (2) : Spanish language; (De-reserved).

Govt. and Politics of Latin America.

FACULTY OF COMMERCE

R (1) : Marketing; Travel & Tourism.

L (2) : Capital Market Studies; International Trade and Business Taxation; Business Policy and Environment. **Desirable** : Expertise in Computer Application.

FACULTY OF MANAGEMENT STUDIES

R (2) : Finance/Marketing/Human

Resource/Production Operations or Computers and Information Systems Management.

Desirable : Research interest in Services Sector.

L (1) : Finance/Marketing/Human Resource/Production Operations or Computers and Information Systems Management.

Desirable : Research interest in Services Sector.

FACULTY OF NATURAL SCIENCES

Department of Chemistry (Physical)

P (1)

L (1)

Department of Chemistry (Organic)

P (1)

L (1)

Department of Chemistry (Inorganic)

L (1)

Department of Physics

R (1) : Experimental Solid State Physics; X-ray Spectroscopy/Optical Properties of Solids/Electrical, Transport and Magnetic Properties of Solids/High Temperature Super conductivity.

L (1)

Department of Mathematics

R (2)

Note : If suitable candidates are not found, then above vacancies will be filled with Lecturers.

Department of Geology

L (1)

Department of Computer Science & Technology

P (2) : Theoretical Computer Science; Artificial Intelligence, Computer Aided Design; Computer Graphics; Software Engineering, Computer Network, Parallel Processing, Object Oriented Programming.

R (3) : Theoretical Computer Science; Artificial Intelligence, Computer Aided Design; Computer Graphics; Software Engineering, Computer Network, Parallel Processing, Object Oriented Programming.

University Science Instrumentation Centre

T.O.-I (2) : Electronics Instrumentation. M.Sc./B.E./B.Tech. in Instrumentation or allied field with atleast 55% or equivalent grade with good academic record.

FACULTY OF LIFE SCIENCES & ENVIRONMENT

Department of Botany

R (1) : Botany with (a) Cytogenetics and Plant Breeding; (b) Angiosperm Taxonomy; (c) Algology.

Department of Zoology

P (1) : Entomology; Animal Tissue Culture; Animal Physiology, Endocrinology; Biotechnology, Molecular Biology.

L (1)

Department of Microbiology

R (1) : M.Sc. in any of the branch of Life Science and/or Environmental Sciences. Ph.D. in related area.

Research Experience as supported by the sponsored research projects and/or publications in the area of Environmental Science - desirable.

Department of Marine Science & Marine Biotechnology

Marine Sciences

R (1) : All specialisations in Marine Sciences such as Marine Biology; Marine Geology; Physical Oceanography; and Chemical Oceanography.

L (2)

Marine Biotechnology

L (1)

University Library

Librarian

i) Master's Degree in Library Science,/ Information Science/Documentation with at least fifty five per cent marks or its equivalent grade and a consistently good academic record.

ii) One year speialisation in an area of information technology/Archives and Manuscript keeping. Master's Degree in an area of thrust in the institution; and

iii) At least ten years as a Deputy Librarian in a University Library or fifteen years experience as a college Librarian.

iv) Evidence of innovative library service and organisation of published work.

Desirable : M.Phil./Ph.D. Degree in Library Science/Information Science,/ Documentation/Archives and Manuscript keeping.

Advertised Second Time

1. Lecturer in Physics.
2. Lecturer in Portuguese.
3. *Lecturer in History.*
4. Lecturer in Political Science.
5. Lecturer in Economics.
6. Lecturer in Philosophy.

Advertised Third Time

1. Lecturer in Physical Chemistry.
2. Lecturer in Organic Chemistry.
3. Lecturer in Inorganic Chemistry.
4. Lecturer in Commerce.
5. Technical Officer-I in USIC.

SARDAR VALLABHBHAI REGIONAL COLLEGE OF ENGINEERING & TECHNOLOGY,

SURAT 395 007 (Gujarat State)

Applications are invited separately for each of the following permanent posts by **31-3-97** in the prescribed form, which can be had on payment of Rs. 50/- for all open category and Rs. 2/- for SC/ST/OBC category belonging to Gujarat State only (on production of Caste Certificate) by a Crossed Indian Postal Order/or Crossed Demand Draft drawn in favour of "Principal, S.V.R. College of Engg. & Tech., Surat". The Demand Draft be made payable at State Bank of India, S.V.R.C.E.T. Branch, Surat, Code No. 3320. A self addressed envelope of 23 cms. x 10 cms. size should be sent.

(A) **Teaching Posts :**

(1) Department of Electronics Engineering : Lecturer. : Open/Two posts. Ist Class Bachelor's Degree in Electronics Engineering.

(2) Department of Applied Mechanics : Lecturer. : Open/One post. Ist Class Bachelor's Degree in Civil Engg.

(3) Department of Civil Engineering : Lecturer. : Open/One Post. Ist Class Bachelor's Degree in Civil Engg.

(4) Department of Mechanical Engineering : Lecturer. : Open/One Post. Ist Class Bachelor's Degree in Mechanical Engineering.

(5) Department of Electrical Engineering: Lecturer : Open/Four Posts. Ist Class Bachelor's Degree in Electrical Engineering.

Pay Scales : Lecturer : Rs. 2200-75-2800-100-4000.

Age limit for Lecturer post is 35 years, and relaxable in the case SC/ST/OBC Category candidates.

PRINCIPAL

SANT LONGOWAL INSTITUTE OF ENGINEERING & TECHNOLOGY

LONGOWAL
(DISTT. SANGRUR) - 148106
(PUNJAB)
(ESTABLISHED BY GOVT. OF INDIA)

NOTIFICATION NO. 02/97

Applications stating name, father's name, date of birth, permanent residential address, correspondence address, qualifications giving detailed marks/percentage of marks, experience, category to which belongs, are invited for the posts mentioned below for Sant Longowal Institute of Engineering & Technology (SLIET), *Distt. Sangrur in the State of Punjab* :-

1. **Professors - 9** : Chemical Tech.-2 (Chemical Engg.-1 & Specialization in *Polymer/Paper Tech -1), Computer* Science & Engg.-1, Mechanical Engg.-3 (Manufacturing Process/Welding Tech./Thermal Engg.), Instrumentation Engg.-1, Electrical Engg.-1 (Power/Drives), Food Tech.-1

   Pay Scale : Rs. 4500-7300/- (Age : Min*imum 40 years)*

   Qualifications :

   i. Ph.D. with Ist Class Degree at Bachelor's or Master's level in Engineering/Technology.

   ii. 10 years experience in Teaching/Industry/Research, out of which 5 years must be at the level of Assistant Professor or equivalent

   Note .

   Candidates from Industry/Profession with recognised professional work of high standard recognised at National/ *International Level* equivalent to *Doc*torate would also be eligible.

2. **Assistant Professors - 9** : Food Tech.-2, Computer Science & Engg.-1, Chemical Tech.-2 (One specialization in Polymer Tech. & one specialization in Paper Tech.), Instrumentation Engg.-2, Electrical Engg.-2 (Control System/ Power System/Machines).

   Pay Scale : Rs. 3700-5700/- (Age : 26 to *40 years)*

   Qualifications :

   i. First Class Master's Degree in appro*priate branch of Engineering/Technology.*

   ii. 5 years experience in Teaching/Industry/Research at the appropriate level.

   Note :

   Candidates from Industry/Profession *with recognised professional work* equivalent to Master's Degree would also be eligible.

   Desirable :

   Ph.D. Degree in Engineering/Technology.

3. **Lecturers - 11** : (Entrepreneurship De*velopment Programme-1, Mechanical* Engg.-4, Food Tech.-2, Instrumentation Engg.-1, Chemical Tech.-2, Computer Science & Engg.-1)

   Pay Scale : Rs. 2200-4000/- (Age: 21 to 35 years).

   Qualifications :

   *First Class Bachelor's Degree in appro*priate branch of Engineering/Technology.

   OR

   First Class Master's Degree in appropriate branch of study in the case to teaching posts in Humanities & Sciences.

4. **Junior Research Fellow - 1** :

   (Rs. 2500/- per month + H.R.A.)

   (Under DST, Project "Development of Ga$_x$In$_{1-x}$Sb *thin films for Device Appli*cations" for a period of 3 years).

   Qualifications :

   M.Sc. Physics/Chemistry, NET/GATE qualified candidates will be preferred.

5. **Senior Technicians - 8** : Computer Science & Engg.-1, Food Tech.-1, Instrumentation Engg.-1, Workshop-3 (Foundry & Forging-1, Pattern & Carpentry Shop-1 & Machine Shop-1), Chemical Tech.-2

   Pay Scale : Rs. 1640-2900/- (Age : Minimum 25 years)

   Qualifications :

   Degree in relevant trade or its equivalent with 2 years Industrial experience in a supervisory capacity in a Industry/Workshop of repute.

   OR

   2nd Class Diploma in relevant trade with 7 years experience in reputed industry/workshop of Technical Institutions/ITIs.

   Note :

   Candidates with less experience will be considered for the post of Technicians in the pay scale of Rs.1400-2300/- *against the post of Senior Technician.*

6. **Supervisor Maintenance - 2** : (Electrical-1 & Civil-1)

   Pay Scale : Rs.1400-2300/- (Age : 21 to 35 years).

   Qualifications :

   i. **Diploma in appropriate branch of Engineering or equivalent.**

   ii. *Must have worked as Supervisor Main*tenance/repairs for a period of ten years. Experience will be relaxed in

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7. **Care Takers - 4 :**

   Pay Scale : Rs.1200-2040/- (Age : 18 to 30 years).

   Qualifications :

   B.A./B.Sc./B.Com. with 3 years experience in the field in Govt./Semi Govt./Recognised Institutes.

8. **Junior Scale Stenographers - 7 :**

   Pay Scale : Rs.1200-2040/- (Age : 18 to 30 years)

   Qualifications:

   Graduate with English Shorthand speed @ 100 w.p.m. and Transcription @ 15 w.p.m. Knowledge of Office Automation Devices/Electronics Typewriter/Data Entry Operation is desirable.

9. **Cashier - 2 :**

   Pay Scale : Rs.1200-2040/- (Age : 18 to 30 years)

   Qualifications :

   B.Com. Ist Class with 3 years experience of Cost Management.

10. **Workshop/Lab. Attendants - 5 :** Computer Science & Engg.-1, Electronics Engg.-1, Food Technology-1, Electrical Engg.-1, Workshop (Machine Shop)-1.

    Pay Scale : Rs.950-1400/- (Age : 18 to 30 years)

    Qualifications :

    Matric Ist Class or 10+2 with Science (Physics & Chemistry) and I.T.I. in relevant trade.

Notes :

1. The upper age limit shall be relaxable upto 5 years in the case of SC/ST candidates. They are required to attach an attested copy of the proof of SC/ST category.
2. The persons already in job should send their applications through proper channel.
3. The age limit shall be as on Ist January, 1997, for all the above mentioned posts.
4. The candidates are required to submit attested copies of their certificates/testimonials alongwith the application.
5. The experience, wherever prescribed, acquired after the acquisition of prescribed requisite minimum qualifications, will only be taken into account.
6. The incomplete applications, i.e. without bank draft, proof of age, proof of SC/ST category, minimum required qualifications and experience will be straightaway rejected without entering into any correspondence.
7. Bank draft issued before the date of publication of the advertisement and after the closing date will not be accepted by the Institute.
8. The SC/ST candidates applying against our notification No. 01/97, need not apply again.
9. The posts advertised can be increased/decreased by the Appointing Authority at the time of selection as per requirements.
10. Retired/Retiring staff having equivalent Qualifications/Experience may also apply for the posts advertised and they will be considered for the Appointments on Contract Basis.
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DIRECTOR

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DIRECTOR

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National Council for Teacher Education
New Delhi

FOR ATTENTION OF CANDIDATES ASPIRING TO JOIN TEACHER TRAINING COURSE

A large number of queries are being received with reference to the NCTEs press notice that appeared in various newspapers in December, 1996 under the caption **'For Attention of Candidates aspiring to join teacher training course'**. It is clarified for the information of all concerned that the National Council for Teacher Education (NCTE) is *a national level body set up by the Govt. of India to look after development and regulation of teacher education* system in the country. The Council lays down policy parameters regarding various aspects of teacher education and all teacher training institutions have to seek recognition from the NCTE as per the provisions of the NCTE Act. The ambit of the NCTE covers all modes of teacher education and all types of institutions which offer a course or training *in teacher education, be it a primary teacher education institution or an affiliated College of education or a constituent* unit of a University. **NCTE ITSELF DOES NOT RUN ANY TEACHER TRAINING COURSES.**

Candidates desirous of entering teaching profession at the school level are, therefore, again advised :-

- *To seek admission to full time teacher training courses only in institutions recognised by the NCTE.*
- Not to join correspondence/distance education mode courses or any other mode of teacher education, except face-to-face full-time courses run by recognised institutions.
- Correspondence/distance education courses are only meant for serving teachers with 3 years experience in a recognised school.
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NCTE recognises only those B.Ed. correspondence/distance education courses which are run by University for regular in-service teachers only in accordance with the NCTE guidlines.

Teacher education qualifications obtained after pursuing a course or training in an institution not recognised by NCTE shall not be valid for employment.

For further clarification, if any, contact the concerned Regional Directors of the NCTE at the following addresses:

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2. The Regional Director Western Regional Committee (NCTE) Manas Bhawan, Shyamla Hills **Bhopal-462 002** Ph. 0755-530912	Goa, Gujarat, Madhya Pradesh, Maharashtra, D&N Haveli, Daman & Diu.
3. The Regional Director Northern Regional Committee (NCTE) A-46, Shanti Path, Tilak Nagar, **Jaipur-302 004** Ph 0141-620116	Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh, Chandigarh, Delhi.
4. The Regional Director Southern Regional Committee (NCTE) 66, 6th Main, 4th Block Rajaji Nagar, **Bangalore - 560 010.** Ph.080-330 6590.	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Laksha-Dweep, Pondicherry.

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ANNOUNCEMENT

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A.N. PATHAK

Technology Management and Technovation

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Editor :
SUTINDER SINGH

Resource Mobilisation for Industrial R&D and Technical Education

Arya Kumar Sengupta*

Organised commercial R&D happens to be a cornerstone policy in all industrialised countries, specially after the oilshock of 1970s. This has given particularly spectacular results in the 1980s in the newly industrialised countries (NIC) of South East Asia and Latin America. In contrast, even though the Indian polity has from the beginning recognised the need for setting up a strong industrial R&D base in the country, in reality the resources spent on this head have been limited. Total R&D funding grew from around Rs. 700 crores in 1980-81 to Rs. 5142 crores (US$ 1.7 billions) in 1992-93. This may look impressive at the first glance, but it still represented only 0.83% of the Gross National Product (GNP) in 1992-93 compared to the world average of around 2.5%. More significantly, the industry's share in R&D expenses in 1992-93 was only 26.4 % (i.e. Rs.1258.48 crores or $ 452 millions), the rest being spent by government (central & state). More than 57% of the govt. share was, however, spent in three strategically important sectors alone (i.e. Defence, Space and Atomic Energy) and another 13% in Agricultural Sciences. Government sponsored expenses in industrial and scientific R&D sector thus was only Rs. 1490 crores ($ 495 millions).

Incidentally, the private sector industry accounted for around 56% of industry R&D funding (about Rs. 771 crores in 1992-93). This represented only 0.64% of their sales turnover. Expenditure on advertising, publicity and entertainment is generally considerably more than R&D expenses in almost every industry organisation.

Of the Rs. 771 crores of R&D expenses accounted for in the private sector more than Rs. 650 crores were consumed in the inhouse R&D in these industries, and another Rs. 110 crores in private R&D units (SIROs). Channelisation of R&D funds from industry (for that matter, from Government also) to academic institutions in India is negligible. It is estimated that sponsored R&D in universities, institutes and colleges together in the whole country would hardly cross Rs. 100 crores, of which majority comes from government departments (such as Defence, Space, Atomic Energy and S&T), some from Public Sector Undertakings (PSUs) and almost nothing from the Private Sector. Most of the CSIR labs also depend totally on the funding from government budget, though in the last few years there has been a thrust on resource generation from alternate sources to the extent of 40% or more (as recommended by the Abid Hussain Committee). There are a few labs like NCL in Poona and NAL in Bangalore who have been very successful in collaborative work with industry, but these remain exceptions rather than rule.

R&D Funding in other Countries

We may compare the national R&D efforts in our country with that

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Managing Director, Foundation for Innovation and Technology Transfer (FITT), Indian Institute of Technology, Hauz Khas, New Delhi-110 016.

in other parts of the world. The total R&D funding in the world was estimated to be more than $ 450 billion in 1990. The amount spent in USA, Japan and South Korea would be around $150 billion, $100 billion and $5 billion respectively. What is, however, more striking is that industry share in all these countries is inevitably larger than that of the government. For example, around three quarters of Japan's R&D spending in 1985 were contributed by industry. In South Korea, domestic private industry contributed more than 80% of the national expenditure on R&D in 1987-88.

This last statistics is all the more relevant from India's point of view, because in all our post-liberalisation debates, comparisons are made with the success of East Asian, especially the Korean economy and its industrial resurgence in recent years. In 1970-71, the Indian expenditure on R&D as a percentage of GNP was 0.35%, and that in South Korea was even less, 0.34%. But soon South Korea opened up its economy, and allowed technology imports in almost all sectors of industry. The industry was, however, obliged to provide clear programmes for absorption and adaptation of technology imported from abroad and was, therefore, obliged to set up their own R & D units or collaborate with publicly sponsored R&D organisations for chalking out a technology absorption path. South Korea also did not permit foreign controlled firms to operate without a clearly spelt out indigenisation programme for adaptation of imported technology. The free market economic policy in South Korea had an over-riding regulatory angle in the domain of S&T, and this regulation was performed by the Korea Institute of Science and Technology (KIST) — an institution equivalent to our CSIR and its successor Korea Advanced Institute of Science and Technology (KAIST). Success of this policy is clearly visible today, with South Korean Industry now competing on equal terms with industries of advanced nations, including Japan. Japan's economic miracle was possible, on the other hand, by close cooperation between the industry, institutions of research and learning, and the government. The regulatory role in Japan's case was played by STA and MITI which managed scientific resources and programmes in a national perspective.

Participation of universities in industrial development in USA, Europe, Japan and South Korea has also been significant. Forty (40) per cent of all governmental R&D funds in Japan is spent in academic institutions. In USA, this is around 25%. In U.K., an average of 40% of total recurrent income of universities come from non-governmental sources including the domestic industry, in the form of sponsored R&D, educational programmes, short courses and endowments.

Industry and R&D in India

The R&D activities in India, be it in the academic institutes or in the research laboratories, have been almost fully supported by government funds. Considering our resource constraints, the sum spent so far has also been fairly large. Yet we have little to show in terms of civilian innovations of our own. We have been importing and reimporting technology for almost everything, from toothbrush to tractors, from bicycles to passenger cars and buses. In the controlled, and more or less closed economy that we had during the last forty years or so, the industry in this country had enjoyed a seller's market in a monopolistic, or at the best oligopolistic, environment. There is little doubt that one main reason for the failure of R&D in this country has been the lack of involvement of industry, who, had they invested seriously in R&D, would have ensured that they got value for its money. There would have been great technical changes, in generating technological innovations and putting new products and continuously improving new processes to compete in the market place.

Academic Institutes and Manpower for Industry

As far as academic institutes of engineering and technology are concerned, industry has an enormous stake. It is estimated that more than 50,000 engineering graduates pass out of the Institutes and colleges every year in this country. A vast majority (80% or more) of them eventually get employed in the industry, both in private sector and in public sector. Relatively a small number go for entrepreneurship; some find employment in government organisations, and few go in for higher education with the objective of taking up career in academia. Thus, the needs of the industry must constitute a most important factor in the design of the curricula, and pre-graduation training programme of students. The National Policy on Education adopted by the Parliament in 1986 and the draft Technology Policy statement of 1993 have both emphasised the need for interactions between the industry and the academia in curricula design exercise in both technical and management development programmes, to project the needs of the industry or the user system. It has been suggested that such interactions should not be restricted to curriculum design only, but should encompass programme planning and implementation, exchange of expert personnel, facilities and resources, research and consultancy and other areas of mutual interest. Such interactions will make graduates more readily useful to industry, thereby reducing the length of training programme in the industry. There is a proposition to make industry internship mandatory for all engineering students before the degree is awarded, just as it is compulsory for medical graduates to undergo internship in a hospital.

Resource Limitation in Technical Education

Resource constraints have always been the bane of technical education in this country. It has been estimated that it costs the exchequer between Rs. 40,000/- and Rs. 60,000/- a year in subsidy for each student in engineering degree courses. We enrol more than 90,000 engineering students every year in 380 institutions recognised by All India Council for Technical Education (AICTE), whereas 35% of the vast Indian population remains illiterate without hope of even primary education. Recently the Government of India has indicated that in the Ninth Five Year Plan period 6% of GNP will be spent on education as against the present level of around 3.7%. There is little doubt, however, that the increase in allocation of funds will mainly go to primary, secondary and vocational education. Cost of higher education, and specially higher technical education, will have to be increasingly borne by the beneficiary of such education and the users, namely; industry and the employers.

Fiscal Incentives

For Industry

A number of tax incentives have already been introduced to the industry for encouraging research and educational activities. For example, 100% tax relief is allowed on bonafide R&D expenses, donations and endowments to educational institutions and Scientific and Industrial Research Organisations (SIRO); sponsored research expenses in some of the premier institutes like IITs and national R&D laboratories are eligible for weighted tax exemption to the extent of 125%. These incentives have, however, on the whole not been able to spur the Indian Industry to collaborate with the knowledge organisations. After two years of introduction of the weighted tax benefit scheme, only five such programmes, worth Rs. 56 lakhs, have been initiated. In some countries like Australia, the incentives for interaction with universities are much higher upto 175%. Therefore, the government may consider raising the incentives given to a higher level, say 133% or 150%, to encourage industry to spend more on this account.

It is, however, essential that significant changes are made to the scope and operational aspects of the scheme. Firstly, the scope may be enhanced to include all activities concerning indigenous R&D (in-house or institutional), higher education and skill development and various types of interactions including continuing education and training programmes, and industrial consultancy activities. Secondly, all recognised academic institutions (authorised to award/degrees and diplomas) and SIROs should be included for industry to interact in order to avail the concessions. Thirdly, the procedures to avail the concessions must be simplified. At present, application forms for weighted tax benefits are required to be submitted by industry in 12 copies. They have to be authenticated by the Department of Scientific & Industrial Research(DSIR) rechecked by a number of agencies in various government departments and finally sent to the Income Tax authorities for the final decision on eligibility; and the timeframe can be anything from 12 to 18 months. This cumbersome procedure is perhaps one reason for very few industries availing the benefit. This must be made simpler and more transparent. Fourthly, the tax incentives have to be uniform across the board, but can be graded according to the status of enterprises, amount of total money spent, area of technology, and so forth.

R&D activities in industry may further be encouraged by offering a concession on tax liability (e.g. Tax holiday for a year) on all savings or additional incomes that can be clearly attributed to results of indigenous R&D, in-house or in an institution, such as new product development, process improvement, safety engineering, etc.

For Scientists and Academicians

For the scientists of the laboratories and the academic faculty, fiscal incentives may be designed as tax concessions (say at 50%) on all income arising out of collaborative R&D and technological consultancy with industry, government departments and other external organisations, international or national. Presently, an academic faculty is not permitted to earn in a year more than his current annual salary through extra-mural activities, e.g. industrial consultancy, honorarium and so forth. This limit in income could, perhaps, be dispensed with to encourage faculty to work more with industry and also to seek contemporary market charges for such assignments. There is little justification in clamping such limits, provided, of course, the faculty fulfils his primary obligations to the college/department/university as far as teaching and research commitments are concerned. It is understood that in the CSIR such limitations on additional income have been withdrawn recently, subject to the existing obligations to the lab in which a scientist is employed.

Enterprising scientists and faculty may also be encouraged to commercialise the R&D outputs by starting own industry or joining hands with one existing, by relaxing some of the restrictive/regulative laws and statutory rules. Regulations on Venture Capital Financing involving new technology development or commercialisation may also need further liberalising.

Resource Mobilisation Opportunities

How does one motivate industry to commit resources for R&D and technical education, from which there can hardly be any tangible return in the short term, and for which, so far, somebody else (in this case the Government) has footed the bill? Fiscal incentives such as tax exemptions for expenses incurred in R&D and education are unlikely *per se* to prove strong enough a motive force to get industry aroused. According to a recent study by the CMIE, majority of the corporate companies in this country pay little or no tax, by virtue of a number of tax exemption/concession regimes already existing, such as on depreciation, export earnings, backward area location, etc. In fact, the average tax pay-out by industry as percentage of their turnover has been hovering around only 2% for the last few years, and the average tax incidence has actually dropped from 24% of the PBT to 15% between 1991-92 and 1994-95, even though the PBT increased by 55% (avg.) during the same period.

In this context, one may build on the suggestions made by the former Member-Secretary, Planning Commission, Dr. Arjun K. Sengupta, while delivering the valedictory address in the 1994 Annual Conference of CSIR. One of his propositions was to make it obligatory on the part of all manufacturing and service companies (including banks and financial institutions) to earmark a certain small percentage (say 2 or 3%) of the business turnover towards R&D and education. It may sound somewhat harsh, and contrary to the free enterprise paradigm, but it has been the experience in most newly industrialising countries that in the initial stages a small amount of coercion can be helpful in nudging the two partners, industry and the research/academic community, towards the ethos of mutual interaction and national development. For example, in Malaysia a cess of 1.5% on turnover is levied on industry for National Skill Development Programme. Of course, this obligation to commit a minimum amount of resources for R&D and technical education is not to be treated as a cess. On the contrary, the industry will be free to, and indeed encouraged to, spend on their own industry R&D and technical education, in their own premises or contracted/sponsored to other recognised R&D institutions or universities/colleges and there would not be any upper limit on the amount for which the company will be entitled to claim all available tax and other fiscal benefits. But they are not spending enough, the remaining portion should go to the national R&D and technical education efforts. The money thus collected can be used to build up a Corpus Fund, and one may suggest that a matching grant be added to this Fund by the Government every year, from its budgetary allocations in education and industrial development.

The enlarged Corpus thus created can form the national resource to support long term fundamental and industrial research as well as to help, sustain and promote excellence in technical education, by way of assisting academic and research institutions in renovation of infrastructure, development of new courses, operation of schemes for student grants/scholarships/loans, etc.

The key to the success, and indeed the general acceptance of the proposal by the industry, however, would be to ensure minimum direct interference of Government and absence of bureaucratic hegemony in operation of the Corpus Fund. One reason for a general lack of enthusiasm of the industry towards the recently formed Technology Management Board to manage the accummulated Import Cess Fund is the fear that programmes chosen to support would be decided finally not on their technical merit or relevance, but mainly by dint of the degree of influence the Programme Coordinator has with the government machinery. The management of the Corpus may, therefore, be entrusted to an autonomous regulatory non-governmental organisation having representatives from industry, financial institutions, academia and government in its governing body, somewhat like the KAIST in Korea. Its operation will have to be transparent so that the resources are seen to be used to address the areas of research and education most relevant to the overall interest of the country, after proper analysis, in consultation and collaboration with all sections of the industry and intellectual community.

On a rough estimate, if such a scheme is implemented, it would be possible to mobilise an additional Rs. 3000 - Rs. 5000 crores ($ 1 - 1.5 billion) every year. Initially, the small enterprises may be excluded and loss making companies may be exempted. One suggestion is to start the scheme with only those profitable enterprises that declare dividends to their shareholders and later encompass all others in a gradual manner.

In the beginning, industry may consider it an additional burden imposed by the Establishment. Statistics based on international experience indicate that every one rupee spent by an industry on R&D gets translated into an additional turnover of Rs. 30/- in a period of 5-7 years. In a few years time, as the benefits of R&D begin to show and the relationships with scientists and professors blossom, our R&D sector will stand on its own feet. The Indian industry will soon find it easier to face the competitive environment, in increasing the productivity and efficiency, and increasing their returns on investment. As has been the experience elsewhere, the fiscal incentives that may be given by the Government will no longer provide the only motivation, but industry on its own will meet more of the expenditures required for the growth of R&D in the country.

The Research Institutions on the other hand will also need to gear up, and each has to draw up concrete action plans to woo the industry by way of contract research and other interactions. The 1988 Abid Hussain Committee Report of CSIR earmarked a target 40% of the budgeted expenses on CSIR labs to be resourced from sources other than DSIR. A clear policy may be enunciated that direct budgetary support from Government to the laboratories and institutions will be brought down to zero within, say, next 5 or 7 years. The Government or DSIR may, however, promise to provide a matching grant to the labs, equal to the net amount generated by industry interaction. Effectively it would mean a larger assistance, since industry will also be eligible for tax benefits. Similarly, academic institutes must also gear up to sell its services to the industry and direct its R&D and other strengths largely to what industry wants to do. Thus the obligation, and the coercion, will be on both the industry and the institutions to develop the national network on R&D and technical education. The research organisations and academic institutions will have to be efficient, responsive to the industry requirements and quality conscious in order to woo clients from industry, and an environment of healthy competition will prevail in a free market scenario.

[This paper was written during the preparation of an Approach Paper on 'Promotion of Interaction between University-Industry-National R&D Labs and National Academies' by a Planning Commission Task Group of which the author was the Member-Secretary. The Approach Paper is shortly to be published by the Planning Commission.]

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Technology Management and Technovation

A.N. Pathak*

Technological capabilities constitute the cutting edge of business strategies of enterprises which excel in the intensively global market space. Countries, industries and firms which have mastered the management of technology are able to rewrite the rules of global industrial competition. Technology absorption, incremental innovation, research and development, technovation and technology fusion dominate contemporary world industry. There are simultaneously the cause and effect of the increasing turbulent and volatile environment of trade and technology round the world. In the present world of the technology dynamics, no commercial firm under these conditions can afford to stand still technologically. If somebody is conservative and tends to do so, the firm is sure to meet its waterloo due to implied stagnation and failure. And therefore, continuous development of technology and technovation underlie the success of companies and firms the world over.

According to Thurow (1992) the need is for developing intensively the seven key technologies namely — Micro-Electronics, Biotechnology, New Materials, Civil Aviation, Telecommunication, Robotics and Machine Tools, and Computers and Software for Communication Technology and Communication. Thurow feels that sustained and intensive development of these technologies is vitally important if the USA is to cope effectively with the competitive prowess of Japan and the European Economic Community (EEC) in the coming years. Thurow also stresses the need for the focus on process innovation as contrasted with product innovation which so far have been strong features of the market industry.

In consultation with the industry in USA, the Technology Administration of the US Commerce Department (1990) has identified 12 marketing technologies as being among those most applied to commercial opportunities. These technologies can be grouped in 4 areas which are mentioned below :

(a) Advanced materials such as ceramics, polymer composites, metal alloys and superconductors;

(b) Electronics and information systems, including advanced semiconductor devices, digital imaging technology, high-density data storage, high-performance computing and optoelectronics;

(c) Manufacturing systems, including artificial intelligence, flexible computer-integrated manufacturing and sensor technology; and

(d) Life sciences applications, including biotechnology and medical devices and diagnostics.

The result oriented technology management can only be achieved through innovative technology management. And, therefore, the development of innovative technology managers is the need of the hour which cannot be comprised on any account. As all of us know, the job of the manager is to manage Men, Materials, Machine and Money; his other important job is to carry out problem analysis, decision analysis and potential problem analysis which means the effective innovative manager must possess the ability to analyse the job situation as also demand and supply in the market.

Innovative technology management largely depends upon the availability of high quality inputs to creativity, technological and management skills. Individuals who embody skills, such as managing national programmes of technology development, managing R & D linkages with entities like consortia, firms, academic institutions and/or combination of these, have a vital role to play in technology management at both national and organisational levels. These managers may be viewed as "changed agents". These managers possess a set of wide ranging skill in engineering, technology production and productivity techniques, organisational culture building, export trade and human relations. They are accepted to integrate together organisational designs and structures, human motivations and competence, policies and decisions, technologies and products. In their absence technology development effects in terms of innovation and diffusion, competitive resource generation may be seriously retarded.

Technovative managers need to be produced by the country's educational system through imagina-

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tive changes in curricula at the level of higher technical and management education. Such changes shall be integral part of restructuring of nations educational system within the overall framework of technology policy of the nation. Commercial organisations should support these changes not only at the level of design of the system of higher education but also at the level of higher internal personnel and human resource development policy.

The education system should move away from and do away with its excessive emphasis on the ability of the students to master a large mass of structural material. It should be reoriented towards developing individual and creative thinking. Multiple perspective on the problem and coping capacity for dealing with ill defined, ambiguous and purely structural problem situation. The educational processes should also focus on character building inculcation of moral values and patriotism. The last one is a most distinguished feature of the educational systems of both countries — Japan and South Korea.

The need of the hour is to strengthen the Industry-Institution Interaction. This link should be made very strong to manage technology effectively.

The national industry policy and technology policy of a country should have cohesiveness and should be complementary and supportive to each other for best technology management system. Both these policies should establish preconditions of an efficient Technology Creative Capability. It is the international gap in technology-generating capabilities more than the gap in the present utilisation of certain sophisticated technologies which needs to be addressed by the national policy makers. Technology is normally not exogenously given to an economy. It is rather the frame of industrial policy and production structure which largely establishes the conditions under which technologies are generated and applied and specific types of technology acquired.

The two basic directions for the focus of the national industrial technology policy are :

(a) Pursuit of an industrial policy which encourages sustained investment and technological innovation by enterprises;

(b) A technological policy which brings the nations to the threshold of international technological competitiveness.

Technological advances are engineered by close interaction among the research, finance policy, administrative and production centres in an economy. Delays, negligence and inefficiency in their network need to be alleviated and the mechanisms and machinery for their coordinative working need to be intelligently defined and operated.

The foremost requirement for effective technology management is high level cooperation among various social actors such as industry, labour, bureaucracy, engineers, scientists and the nation's decision makers in terms of a shared set of values, beliefs, norms and national goals.

Technology Management in India

Both China and India continue to emphasize indigenous science and technology (S&T) capabilities — a much stronger pull in favour of imported technology is evident since 1980. At present the adjustment and reorientation of their R & D infrastructure in the wake of open market driven policy is going to be the main challenge. The comparative study of science and technology development strategy in India and China was undertaken by National Institute of Science & Technology Development Studies, New Delhi, India and Central South University of Technology, Changsha, China in the year 1995. The important recommendations of this study are :

(a) In both the countries reforms in the economic system and in the R & D system are being carried out simultaneously to have a synergetic impact on technology development. This needs to be illustrated in an integrated form. Basic differences and the lessons to be learnt may be highlighted from the experiences in India and China;

(b) Looking at the needs of the 21st century, S&T strategies and policies should be oriented towards coordination between science, technology and the economy for faster growth and sustainability. The concept of environment-friendly technologies should be built up in the future development approach;

(c) The report should bring out Economy-Technology-Science (E-T-S) model approach keeping in view the present paradigm of technology and economic growth;

(d) Self reliance and import substitution as the basic condition in India and China should be highlighted with case studies. Effectiveness in implementation of various plans formulated over the years needs to be reflected. Policy recommendations may be given separately for each country.

Broad indicators of science and technology in India and China are depicted in Tables 1 and 2.

Table 1&2 : Broad Indicators of Science and Technology in India and China

INDICATOR	INDIA	CHINA
Per Capita GNP (1993)	US$ 300	US$ 490
Total S&T manpower (including Technicians)	4.50m (1990)	17,168 (1991)
Total Scientists and Engineers	3.8m (1990)	1.2m (1991)
Per million of population	4500	1100
R & D Personnel	2,93,348 (1992)	617000 (1990)
Per million of population	350	561
Number of Institutions of Higher Learning	7101 (1989)	1075 (1990)
Total Enrolment	3.95m (1989)	2.065m (1990)
Total Number of Teachers	25m (1989)	0.400m (1990)
Enrolment in Post-graduation & Research	418000 (1989)	107000 (1993)
Total No. of Post-Graduates	256552 (1981)	140000(1981-91)
Ph.D.'s	20213 (1981)	4610 (1981-991)

INDICATOR	INDIA	CHINA
Total Exp. R&D billion US$	2.17 (1992)	2.84 (1994)
As % of GNP	0.84%	0.5%
In it share of Government	76.8%	73%
Public Industry	10.6%	27%
Private Industry	12.6%	—
Expenditure on R&D per Scientist (1990)	US$ 614	US$ 1871
Patents (1985-90)		
Filed	17731	142922
Granted	11451	52171
Indigenous	2885	47439
Foreign	8566	4732
Publications All scientific (Research Papers) Total (1986-90)	15909	3461
Share in World Output	1.3%	0.27%
Relative Citation Index	0.8%	0.43%

The scientific policy resolution issued in 1958 and the technology policy statement adopted in the *year 1983 were the basic guidelines for Indian Science* & Technology. The Technology Policy - 1983, had a definite emphasis on self reliance and technology development.

The need of the hour is to lay stress on application and diffusion of technology. And, therefore, a draft of new technology policy (NTP) statement was prepared in the year 1993 which was circulated to various noted scientists, technologists and engineers for their comments. The draft NTP has listed 5 aims and 13 other areas which include identification of technological priorities, means and action necessary for achieving goals, direction of institutions, technologies and ministries, and specific targets to be achieved in stipulated time. The NTP clearly articulates understanding of existing capabilities, gaps to be filled and takes note of the expectations of those involved in the follow up and implementation of the NTP so that all those whose work gets directly affected by the NTP identify in it shares all their concern. The author is sure that such an approach would result in a policy statement which is Demand Driven rather than Supply Driven.

The objectives and the thrust areas are listed in Tables 3 and 4 respectively :

Table 3 : The Objectives of New Technology Policy Statement

i. Achieve a greater spread in the use of technological developments.

ii. Ensure accessibility of technological devices to all segments of the society with a special emphasis on remote and rural communities in order to improve their quality of life.

iii. Enhance infrastructural facilities.

iv. Upgrade traditional skills and reduce drudgery keeping in view the special needs of women and the weaker sections of society, and

v. Encourage industries for enhancing human skills to upgrade existing technology to comparable international levels as well as to attain such levels for newer and emerging technologies.

Table 4 : Thrust Areas in New Technology Policy Statement

i. Energy related technology including those for alternative fuels, renewable/non-conventional source, and energy conservation technology with due weightage to domestic/local availability base.

ii. Technology for conservation of land, water and energy resources and their integrated management for sustainable development leading to their ecologically balanced management and obtaining higher efficiencies in utilisation and availability of newer sources of water.

iii. Local specific requirements of exclusive concern to our own milieu such as those based on our natural resources and characteristically indigenous industries like those in the small scale sector or based on traditional and household skills.

iv. Extensive and intensive mapping and exploration of natural resources as well as estimation of reserves for optimal utilisation of such resources to include benefication and new application with special emphasis on integrated R&D in the mine, mineral, metal and material chain.

v. The necessity of protecting vast sections of people against natural hazards like earthquakes, cyclones, droughts and floods.

vi. Agriculture allied services and agro-based industries including development of non-hazardous pesticides, herbicides and fungicides.

vii. Technology for provision and maintenance of health services leading to development of new drugs, medical devices and instrumentation, vacancies and their delivery systems.

viii. Technology relating to betterment of infrastructural facilities such as transport, communication and housing.

ix. Areas which are relevant to a whole range of modern systems like materials development, biotechnology, electronics and communications with emphasis on new product design.

x. Manufacturing sciences and technologies to improve industries, including electronification as appropriate for higher productivity and upgradation on industrial processes with due consideration to employment productivity and automation.

xi. Areas where continued imports and difficult to sustain, e.g. petroleum products and capital goods (e.g. instrumentation and equipment hardware).

xii. Emerging and as yet unexploited zones of resources like oceans, and

xiii. Speedily enlarging areas of recognised strength like software.

Although the technology policy statement of the Government of India clearly states that Indian Science & Technology must unlock the creative potential of our scientists and engineers and help in building the India of our dreams, and although the policy considers human resources to be our richest endowment and advocates for creating such conditions which allow the fullest expression and utilisation of scientists' talent, it has not been implemented so far even after 14 years of its release due to redtapism and power hungry administrative bureaucrats and *scientific bureaucrats.*

Strengthening of Technovation Through IITs, IIMs and Regional Engineering Colleges

According to Amrik Singh (1995), IITs, and IIMs have a unique place in Indian higher education system. There is a need to direct their isolation from the rest of the university system and become active partners in the whole educational endeavour. This does not mean that they have to be like other universities but there is to be greater interaction between the technical sector and main stream sector i.e. industry-institution interaction is to be strengthened. Being the strongest unit in the technical sector the IIT's have special obligation in this respect and this is high time they start thinking about it.

According to the final recommendations given by N.C. Mathur Committee, two issues are of importance — one relates to reorientation of teachers at the B.Tech. level and the other is how to involve the faculty in promoting industry-institution interaction. The five salient points of the report are :

1. A new course of action needs to be adopted to enhance the exposure of B.Tech. students to the industrial scenario of the country. Various steps in this direction have been suggested by the curriculum review committees of the IITs. These include a well-planned and supervised summer training programme and industrial tours for the students. The quality of the B.Tech. project needs improvement with greater relationship to the actual needs of industry. This can only be achieved if the faculty have greater involvement with industry and the institute as a whole invites more participation from industry personnel through lectures in courses, extra-mural lectures and adjunct professorships. All these are feasible and need only the will to achieve them.

2. The involvement of faculty in the industrial scene requires a multi-pronged approach. The following are amongst the possible steps :

(a) Incentives to faculty who participate in industrial interaction in one way or the other.

(b) Changing the rules regarding sabbatical leave so that leave can be utilised for industrial participation.

(c) A tilt towards industrial experience as a desirable qualification when considering candidates for faculty recruitment.

(d) Encouraging consultancy by reducing the amounts that go to the institute as over-heads from consultancy income.

(e) Changing rules so that faculty can draw part of their salary from project fund in return for reduced teaching load.

(f) Encouraging faculty to start their own industry and providing suitable facilities and benefits (as had already been started in IIT, Kharagpur).

3. The IITs make a concerted effort at getting top class textbooks written for use with emphasis on the Indian work environment and developments in India. Some IITs have already started this scheme. However, much greater effort needs to be made with proper incentives and remuneration. This should be considered equivalent to a teaching load and a definite time frame should be set.

4. IITs must develop a system of student evaluation of both the teaching programme and the teachers. Such systems are widely used in the US and provide an input for faculty assessment as well as course improvement. When used for faculty assessment, they provide both an incentive and a check to maintain standards.

5. Contact with alumni needs to be increased to encourage financial contributions and their participation in the growth and development of the institutes.

Success and Failure Stories

The four major organisations involved in technology development, upgradation and transfer in India, namely, Indian Council of Agricultural Research (ICAR), Council for Scientific and Industrial Research (CSIR), Indian Council of Medical Research (ICMR), and Defence Research and Development Organisation (DRDO) have varying credibility in the eyes of Indian society based on their major success and failure stories. The Green and White revolution achieved with the help of ICAR is praise worthy, so is the case with DRDO for strengthening Indian Defence in terms of materials and machinery. But the credibility of CSIR and ICMR has always been questioned due to the failures on many fronts compared to success in the few cases. CSIR has been able to successfully commercialise chemical technologies, food technologies, building technologies and mechanical technologies but has failed miserably in scale up of biotechnologies for their commercialisation particularly in the areas of antibiotics, organic acids such as lactic and citric acids produced by fermentation as also other major biotechnologies. The ICMR also could not bring laurels home although vast infrastructure exists in this sector in India. The major cause of failure, in these two sectors is mismanagement of technology and technovation. Laboratories are headed by scientists/technocrats who do not have enough field and/or industrial exposure resulting in poor visualisation of industrial demand. This results in development of supply driven technology rather than demand driven technology in most of the cases. The situation needs to be corrected urgently. Any further delay is inviting disaster in the field of technovation.

Dynamics of Ideas in the Japanese Innovation System

According to Tatsumo, 1990 the interplay of innovative ideas in the Japanese innovative system consists of phases which are described in figure 1. These ideating phases are characterized by sequential and cyclical linkages amongst them.

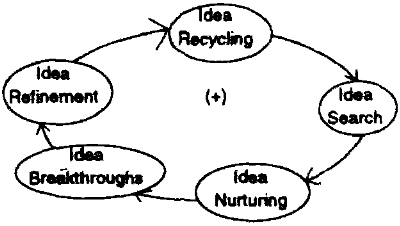


Figure 1 : Cyclic phases of ideation in the Japanese innovation style

There have been success and failure stories in Japanese innovation too. Salient factors underlying the Japanese industrial system prowess in productivity, technovation and global competition are :

Salient Features of Japanese Innovation System

1. Technology Scanning and Trend Monitoring.
2. Creation of technological competencies and genuine technologies of industrial significance.
3. Promotion of technological innovations.
4. Refinement and fusion of existing technologies.
5. Harmonization of several streams of technologies.
6. Extensive interfirm collaboration within and across industries.
7. High level skills in rapid commercialization of new technologies.
8. Horizontal information flow structure for coordination, information sharing and decision making within and across organisations.

9. Gross functional integration across specializations and structural units for management and synchronization of firms.
10. Stable relationship between users and suppliers affiliated from vendors, customers and others.
11. Availability of low cost capital to companies.
12. Intense competition among firms in the domestic market.
13. Experience and design looping within firms in which inventors, researchers and designers interact and share their experience for continuous improvement.
14. Concept crossing in quest of innovation.
15. Rapid renewal of products based on information technology.
16. Rapid absorption and assimilation of acquired technologies.
17. Continuous business diversification — regular search for new market opportunities.
18. Consolidation of diverse technologies through joint ventures, tie-ups.
19. Preponderance of industry funding for R & D. Quest for technical leadership.
20. Synergy between unit level, industry level and national level strategies promoting competitiveness in global market place.
21. Teams for new ventures, technology acquisition, technology assimilation, technology transfer, technology assessment, etc.
22. Self reinforcing relationship between techno-scientific capabilities and technovation.
23. Consistency and coordinated orchestration of government policies pertaining to trade, technology, industry, education credit investment infrastructure in pursuit of nations commercial and economic interests.

Japanese Failure in Technology Development

The Japanese experience has failed in developing technologies in the crucial areas of consumer electronics such as — digital transmission technology and in the development of high definition television.

Japanese failures to anticipate and to prepare for the least in the digital technology has left the country so far behind that Japanese hightech firms could takeup a decade to catch up. Japanese failure and neglect of the development of powerful personal computers and high level software capabilities associated with other increasing uses is known to everybody. These mistakes were further compounded by their inability to 4 CD power and potentiality of the PC networking in the "Open System" mode. Due to these technological lapses in hardware and software Japanese industry is in a weak position to compete in the emerging land market for multimedia products which are primarily based on PCs. It is hoped that in view of resilience and strength in all Japanese industry as also Japanese Technology such setback may prove to be temporary only.

Methods in Technovation and New Product Developed

Technovation is a messy, disorderly and highly uncertain process. Normally operating as it does at the frontiers to extend knowledge, it usually tends to be highly unstructured, ill defined and poorly understood. This results in identifying and evolving a promising strategy of R & D becoming an exceedingly difficult process. A structuring approach would not by itself reduce the problems, but may serve to clarify and even eludicify its nature thereby rendering it more manageable. Huristics structuring methods outline the process for a tentative conceptualization and structuring of a technovation problem. These methods are based on concepts and paradigms drawn from artificial intelligence cognitive science, technological forecasting and management science. The main structuring methods are listed blow :

1. Morphological Matrix Analysis
2. Relevance Tree Analysis
3. Problem State-Space Method
4. Knowledge Classification Matrix
5. Network of Information
6. Sequence Specification Procedure

Conclusion

The technovation system moves on a sufficiently effectiveness of operations in an industry. The system is not immune to human errors of interpretations and judgement. More importantly, however, it is the harmonious orchestration and synergistic complementarities of the factors that distinguish the technovation system from other systems. In Japan orchestration and synergy are accomplished through network on a national scale. Behind this teamwork lies a shared vision of the country's economic future, as also the shared perception of country's economic vulnerability by most of country's decision makers which is totally missing in Indian situation due to vested interest and ulterior motives. And this is the rootcause of lower growth rate in the economy of the country compared to its potential.

Indian Agriculture — Future Challenges

Dr. M.V. Rao, Vice-Chancellor, Acharya N.G. Ranga Agricultural University, Rajendranagar, Hyderabad delivered the convocation address at the Seventeenth Convocation of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. He said, "With little or practically no scope for horizontal expansion of cultivable land, more than 70 per cent of the future food needs have to be met from positive productivity shifts on lands already brought under the plough. The average yield of different crops have to be pushed up by 40 to 60 per cent through better soil and water management, supply of inputs and prevention of losses due to pests, diseases and post harvest losses". Excerpts

As an Agricultural Scientist, Administrator, I have had the good fortune to participate in the developmental activities related to agriculture and allied activities in different parts of India. So much so I often wonder whether it would be possible for me to spend a day without thinking about the country's agriculture, its problems and prospects. I have therefore decided to share a few of my thoughts about the emerging scenario of the country's agriculture. In attempting to do so, I do not profess to have answers to all the myriad problems facing the country's agriculture. Nevertheless, I wish to provide some options for dealing with the problems of food and nutritional security of the vast populations, a large proportion of whom continue to live precariously below the poverty line. For even those who are considered to live comfortably above the poverty line, it is necessary for us to examine whether they are in a position to afford nutritionally balanced diets and the other day to day requirements of clothing and shelter. Let me now dwell upon the future scenario of food needs and supplies.

Food Needs — Emerging Scenario

The food needs are directly related to population densities, purchasing power and the food habits of the country's population. India's population was 230.8 million in 1901, 690.5 million in 1981, 840.4 million by 1991 which now rose to about 950 million.

Several projections on population growth have been made and I also wish to hazard a realistic guess based on an annual population growth of around 2 per cent till the year 2000 AD and a subsequent expected stabilization at around 1.5 per cent annually. Applying this yard-stick, the population of the country is expected to progressively increase and cross the one billion mark by the turn of the century. By 2025 the population is expected to rise to 1440 million. According to the Population Reference Bureau of the United Nations while it took 60 years for the population of China to double, it took only 34 years for India to double its population. The population densities are expected to progressively increase to 1.25, 1.45, 1.70 and 2.3 billion by the year 2010, 2020, 2030 and 2050 respectively. The purchasing power of the population is expected to increase due to progress in the various spheres of economic activity such as industry, commercial agriculture, trade, utilities and services. The future scenario is thus not a rosy situation. In fact the country's future trend in population growth has prompted some expert to predict that fatigue has set in the country's green revolution and India will be compelled again to import massive quantities of around 40 million tonnes of food grains in the next three decades. Examined on the facts and figures the situation appears to be truly alarming. Any complacency in the country's agriculture sector may perhaps make this situation appear in advanced of the predicted 2030. The country's current food reserves of more than 30 million tonnes appear ephemeral in the background of this situation.

Food Consumption and Production

Extrapolating the population statistics and food needs to work out projected future requirements in the years to come it is estimated that in the immediate future 2000 and 2010 AD the requirements of food grains in India for direct human consumption alone will be 205 and 245 million tonnes respectively. The current (95-96) production being around 190 million tonnes, the country has to face the challenging task of producing 15 million tonnes and 55 million tonnes more of food grains alone in the next four and fourteen years respectively. The future beyond 2010 is much more challenging because the increase in demand for food grains imposed by population pressures and improved purchasing power is so severe that the country has to

face the unavoidable task of producing additional 100 million, 145 million and 260 million tonnes of foodgrains by 2020, 2030 and 2050 AD respectively, which implies that in another 35 years the country has to more than double its food production. With the shrinking land resource base the options available before the country are limited. Either we have to bring more land under plough to improve the cropping intensity or increase yield per hectare. Any area increase to boost agricultural production has to come from waste lands as most of the cultivable lands is sown to one or the other crops. Waste land development is a difficult and challenging task because of marginal fertility and lack of water for irrigation. Enhancement of the productivity of land already being cultivated, appears to be more realistic option to pursue. Where assured water supply is available the cropping intensity can be improved through a wise choice of crop cafeteria approach. The production of food grains which was 51 million tonnes in 1950-51 increased to 192 million tonnes in 1994-95. The productivity of wheat (2375 kg/ha), rice (1850 kg/ha) and oilseeds (800 kg/ha) improved better than the crops during the period 1950-1994. More than 80 per cent of the area under wheat is now irrigated, the principal reason for yield stabilization at a fairly high level. Compared to this only 48% of the area under rice and less than 10% of the area under different species of coarse cereals, pulses and oilseeds are irrigated. This is one of the principal reasons for non-stabilization of yield of these crops at acceptably optimal or high level. The production and yield improvements of crops were achieved through the adoption of High Yielding Varieties and high input oriented technologies. During the period (1970-71 to 1994-95) of 25 years the use of seeds of high yielding varieties of crops increased from 2 lakh tonnes to 6.5 lakh tonnes. The fertilizers consumption increased from 0.3 million tonnes in 1960-61 to 12.4 million tonnes in 1994-95. The per ha consumption of fertilizers increased from a little more than 1.9 kg in 1960-61 to75 kg/ha in 1994-95. The annual growth rate in fertilizer consumption has increased phenomenally at about 11.5 per cent. During the green revolution period (1965-75) wheat production increased substantially at about 9-10 per cent annually. Subsequently the production and yield improvements were not as spectacular and stood at 2.5 per cent each approximately. In other cereal crops like sorghum, maize and pearl millet yields have increased production, even though the area under these crops is declining. The yield gap between what is being achieved and what can be achieved is still very high in most of the crops in the country and here lies the opportunity for Indian Scientists, farmers and input agencies to bridge the yield gap and increase production. While food security is of prime concern to prevent social tensions, the Nutritional Security is also equally important to bring up a healthy population. The present worrying fact is that the area under coarse cereals which have better nutritive value to meet the protein-calorie-mineral malnutrition, is declining and the food preferences of the economically vulnerable sections of the society is drifting from coarse cereals to rice and wheat. The low productivity of the coarse cereal crops largely cultivated under rainfed conditions coupled with economically poor returns is making the farmers shy away from coarse cereals.

Yet another significant land mark in the history of agricultural development in the country is the doubling of production of oilseeds within a period of less than a decade during 1985-94. The achievement is out of the efforts of the Technology Mission on oil seeds which has enabled the country to overcome import of edible oils and save precious foreign exchange. In addition the country has turned out to be a major exporter of oilseeds cakes, oil meal and confectionery type of groundnuts.

Strategies for Meeting Food Needs

The future course of action calls for a more pragmatic approach. The focus should now be diverted towards ecologically less endowed areas where present levels of productivity of crops are still low even though acreage under different crops in these areas are still large. Efficient conservation of rain water, sustainable harnessing of ground water enabling farmers to have access to upstream inputs such as fertilizers and plant protection chemicals and prevention of post-harvest losses of crops and help adding substantial tonnages of food grains and oilseeds to the food basket. With little or practically no scope for horizontal expansion of cultivable land, more than 70 per cent of the future food needs have to be met from positive productivity shifts on lands already brought under the plough. The average yield of different crops have to be pushed up by 40 to 60 per cent through better soil and water management, supply of inputs and prevention of losses due to pests, diseases and post harvest losses. This is a challenge faced not only by India but several other Asian countries. The attention therefore should now shift to areas where crops are cultivated under rainfed conditions. It is in these areas that there still exists a vast potential to bridge the yield gaps. The transfer of available technologies particularly for soil and water conservation and use of inputs such as fertilizers and pesticides have still not pervaded in most rainfed and dryland areas. Some simple soil and water conservation technologies such as cultivation across the slope, counter cultivation, opening of dead furrows, appropriate internal sequential cropping systems and summer ploughing, which can be adopted without much of monetary inputs can push up the yield of crops such as sorghum, maize and other millets, red-grams, bengalgram and groundnut, have to be made popular with the farmers. The extension efforts should now shift from a prescriptive approach to a promotive effort. This calls for enlisting the active participation of farmers to identify the constraints affecting the adoption of the technologies and fine tuning the technologies so as to enable the farmers to adopt them.

Irrigated Agriculture

Starting from Second Five Year Development Plan, through massive investments in large and medium irrigation projects, the area under irrigation has been enlarged to around 40 per cent of the total cultivated area over the past four decades. This development succeeded in improving the productivity of several crops since past three decades. Irrigated areas are now oases of prosperity amidst vast stretches of poverty. The technology spread has been comparatively better in these areas whether it is spread of HYV's, use of fertilizers or plant protection chemicals. But the yield of several irrigated crops such as wheat, rice, maize, and sugarcane and more recently sunflower have stagnated and have even shown signs of gradual decline. Severe mining of native soil fertility, development of soil salinity and ill drained soils, pest resurgence and resistance and, non availability of appropriate seed and planting material are all affecting the stability of crop production. These are the areas where irrigation water has been made available with massive investments working out to Rs. 35,000 to 40,000 per ha. Discipline in water use should be enforced compelling the farmers to adopt scientific and sustainable cropping patterns. Too much mining of soil fertility has to be prevented at all costs otherwise agriculture is bound to become unsustainable and non remunerative. After having made such huge investments any laxity in dealing with the problems peculiar to irrigated areas is totally unjustified. Integrated plant nutrient, pest and disease management, proper water use and balanced use of fertilisers can overcome the problems of yield stagnation.

Irrigated ecosystems are becoming cesspools of atmospheric pollution due to increased use of inputs such as pesticides and fertilizers. There is a global awareness of the impact of intensive agriculture on the ecosystem. This is yet another area where our young and aspiring graduates have to be sensitized. Eutrophication of water bodies, global warming and green house effect, ozone depletion, pesticide pollution and their entry into the food chain are the several problems affecting intensive agriculture. In the years to come, due to environmental activism these problems will be getting increasingly highlighted. Environmental Impact Assessment for Agricultural Development Projects will become an essential component of the project proposal and appraisal. The human resource which can undertake this job is very much in short supply. The State Agricultural Universities do have the responsibility to train the needed manpower to tackle these problems.

Transfer of Technology

The State Agricultural Universities, the network of ICAR Research institutes, all India Coordinated Research Projects and the International Agricultural Research Institutes are generating technologies with the avowed intention of helping the farmer. However, as far as technology transfer is concerned there is a lot more to be done. A large component of activities related to agriculture, horticulture, fisheries, animal husbandry and post-harvest handling and marketing at the individual farm level is handled by farm women. Unfortunately most of the initiatives aimed at technology transfer have so far ignored this vital aspect. Similarly rural youths are better equipped to appreciate the value of improved technologies. In all future efforts the farm women and rural youth should be specifically targeted to a assimilate and disseminate technologies. Field testing of technologies is essential to fine tune them for promoting their effective adoption. As pointed out earlier Participatory Rural Appraisal with active involvement of farmers to generate and test technologies in the field is essential.

A particularly disheartening feature of Agricultural Education System in the country is the unwillingness of the graduates and postgraduates trained in SAUs, to move to villages and tribal areas. A large number of them search for employment in urban, semi-urban areas. Are we training students to ignore rural life and needs is often a question which bothers me as the Head of one of the largest SAUs of the country. What should we do to correct this situation? The ultimate solution may lie in making rural life as convenient as urban life if not as comfortable. There are several factors which make rural life less convenient. Access to health care, sanitation, education, entertainment and communication are some of the factors which have continued to widen rural and urban life. Unless rural industrialization based on the local strengths and assets is promoted, the concept of rural development and transformation will continue to remain elusive. This problem is particularly serious in the less endowed rainfed and dryland areas. There is also a need to reorient the Agricultural Education System to enable students to appreciate rural life and problems. In this direction our University has introduced the Rural Agricultural Work Experience Programme. But a lot more needs to be done in this direction.

Post-Harvest Technology, Marketing and Exports

Very little of farm produce is processed for conversion to value added products. With respect to perishables such as fruits and vegetables, less than 2 per cent of the produce is processed after harvest. Therefore, a large volume of the produce is wasted due to spoilage or sold without processing or value addition. In developed countries more than 90 per cent of the farm and aquatic produce are subjected to post harvest processing and product development. This also generates lot of employment and prosperity.

Many types of agricultural produce can be processed and converted to value added products at the village level itself. But this aspect has been largely ignored. Micro level planning has to be undertaken to identify areas which have a potential for production and processing of agro-based products either for domestic consumption or for exports. Such captive areas should be developed as specific processing and export promotion zones. Fortunately in Maharashtra this pragmatic thinking has already taken in most of the minds of administrators and farmers alike which is because of the strong history of a successful cooperative movement in the State. Grapes are processed for exports now in Maharashtra which has emerged as the largest exporter of grapes. In citrus and other fruits like pomegranate, sapota, mango, berries etc, also this change should come. Even though cirtus marketing and processing industry has been fairly well organised to meet the domestic needs much more can be done to promote the export of the produce. But for doing this the competition from several countries have to be taken into consideration. Similarly mango processing and marketing has to be well organised which calls for coordination among several agencies. Maharashtra has emerged already as a major exporter of this fruit but there is still a lot of potential which remains to be exploited.

With respect to exports, there is a need to do a lot of rethinking and introspection. Do we really have the necessary human resource and infrastructure to compete in the international markets? Some smaller countries such as Malaysia, Thailand, Indonesia, Israel and Philippines have succeeded in exporting sizeable quantities of different agricultural produce because of a lot of careful micro level planning for identifying specific zones and infrastructure development has gone into the effort. Therefore, for promotion of agro exports short and long term policies have to be pursued. For example, we can immediately export from the country scented and non-scented rice, wheat and such other commodities provided landing and shipping problems are attended to. But for the export of perishables including floriculture products, a lot of careful micro level planning, infrastructure development and coordination among different agencies is essential. The human resource needed also has to be trained, a responsibility which the SAUs have to own.

Population Pressures and Agricultural Development

A daunting problem which the country faces is the copiousness of population explosion, which was 84 crores in 1991 and is expected to cross 100 crores by the year 2000 AD. Another 25 crores will be added in the next decade by 2010. The thread of feeding 144 crores looms large by 2030 India which by 2050 overtakes China is expected to have the dubious distribution of becoming the most populous country in the world. Whatever development and progress is achieved by the country is automatically nullified by the uncontrolled population explosion. But the allocations made towards population control do not at all commensurate with the magnitude of the problem. Unless the level of population growth is brought down to manageable limits of less than 1.5 per cent from the current level of 2.15 per cent there is no salvation for the country. The phenomenal progress in the field of agriculture and industrial development which the country has been able to achieve since its independence has been drowned in the maze of population explosion. The per capita availability of essential requirements of the population cannot be expected to be maintained even at the current level unless drastic steps are initiated for population control. Food production targets cannot be enhanced continuously to feed the increasing millions because the carrying capacity of the ecosystem has already ben subjected to severe stress. The dangerous prospect of millions of men, women and children going to bed hungry cannot be prevented by advocating increased production of food as there is a limit to the biological capacity of natural resources. I plead for a serious debate on this issue and for enforcing laws to prevent any further population explosion. This is in the realm of our policy makers and if there is a political will something can be done in this regard. Mere posing of the threat of population explosion from public platforms will not help to correct the situation. Bold initiatives are needed across the length and breadth of the country, irrespective of caste or community, to tackle this most serious problem confronting the country.

TRIPS and its Relevance to Indian Agriculture

The country has accepted to fall in line with the Dunkels' proposals on Trade Related Intellectual Property Rights. This policy initiative calls for major changes in the intellectual Property Rights laws as related to Agriculture. As of now Indian law does not recognise any form of Intellectual Property Rights. The Indian Patents Act of 1970 excludes IPR from its realm. These provisions of the Patents Act are in conformity with the laws of most other countries. Even in advanced countries like USA no patent rights were awarded for a plant variety till 1985 and in Europe such patents were not recognisd till 1989. However, USA and European countries had adopted a form of Laws to protect Intellectual Property Rights by having what is known as the Plant Breeders Rights. In India we do not have any Plant Breeders Rights act enacted. The several plant varieties and hybrids which were evolved and which made it possible for the country to have the Green Revolution are all unprotected. But the Dunkels' Proposals do not give the Member Countries the option to stay out of the domain of patenting of some products and processes. Exclusion from patenting laws are related to moral order, surgical methods, etc. Therefore, some form of IPR has to be introduced by enacting laws in our country to recognise Plant Breeder's Rights, patenting of micro-organisms and microbiological processes which have the capacity to enhance the productivity of crops and animals. The farmers who are the principal agents of preservation of germplasm have, however, the right to save seed which is an integral part of the International Union of the Protection of New Varieties of Plants (UPOV). There is an opinion that introduction of Plant Breeder Rights in the country will slow down the evolution of new varieties and thus their adoption by the farmers. However, it is essential that to protect the rights of the scientists who are involved in the breeding of new varieties and biotechnologies it is preferable to enact appropriate legislation. Otherwise the country will be at a disadvantage in the international scene if such technologies are patented elsewhere.

Consolidation of Land Holdings

Marginal, small and semi medium land holding constitute more than 90 per cent of the total holdings in the country. The number of such holdings are increasing gradually due to sub-division and fragmentation. This is not a very encouraging trend. Bold steps are needed to stop further sub-division and fragmentation and to consolidate the small, marginal and semi-medium land holdings. Smaller land holdings are uneconomical to cultivate, as also the very large ones. The land holdings should be kept within permissible limits for economically exploiting the resources. Cooperative farming is a way out to consolidate land holdings for the purpose of cultivation. Even though idea is appealing, it may be utopian to pursue in the Indian context because of the deep sentimental attachment to land by individual farmers. But some way has to be found to organise farmers to procure inputs and services for cultivating their land and for the marketing of their produce. This will reduce the burden of individual farmers.

In conclusion, I wish to stress that the challenges to be faced by the young men and women who have earned their degrees and are passing out of the portals of this University are formidable. A holistic approach is needed to develop Agriculture, Animal Husbandry, Horticulture, Fisheries and allied sectors of the economy to bring prosperity to the rural masses. The predictions of Padwick brothers and Paul Ehrlich of impending famines and deaths may have been proved wrong now but can we do the same when we move from the 20th to 21st Century? Can we disprove Malthus? The recent predictions of the International Food Policy Research Institute are that the country will face serious food shortage by the year 2030. To prevent this catastrophe from happening we should have commitment, National pride and spirit to work hard. There is no need for different regions of the country to produce all the requirements like food grains, oilseeds, sugar, cotton, fruits or vegetables. The strengths, weaknesses, opportunities and threats of each of agroclimate regions of the country have to be worked out carefully and proper micro level planning exercise has to be undertaken to promote specific cropping and farming systems in the different zones based on their relative strengths and weaknesses. A lot needs to be done on these aspects. Marketing infrastructure has to be improved to enable farmers to have access to commodity markets. Otherwise a lion's share of the profits will continue to accumulate in the pockets of middle men and commission agents.

With respect to Maharashtra, 12 districts have been identified as Drought Prone and any further investment on agriculture and Rural Development should go to these regions. Improvement of irrigation, soil and water conservation, private sector participation in Horticulture and Post Harvest Processing and increased emphasis on agricultural research and of prosperity.

I wish to stress my friends that the basic priorities of planning in the agriculture and allied sectors are neither illusory nor non-attainable. The biodiversity available in the country is vast and genetic potential of several cultivated plant species still remain untapped. The success of green revolution was achieved on a less stronger infrastructure. The ecological diversity, broad genetic resource available, the huge and well developed national agricultural research system and excellent human resource, that is available should enable the country to perform well in agriculture and allied sectors in future, belying the prophets of doom. I am optimistic that the country will emerge as a strong nation because its foundations for agriculture are well laid and sustained over the years. The country is crystallizing its priorities for agricultural development in a policy document. The policies once implemented and supported should enable the country to achieve all round development.

SCHOOL OF MANAGEMENT STUDIES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Invites applications from Computer organisations specialising in Wide Area computer networking and connectivity with multiple locations.

The School is planning to offer shortly management programmes backed by technology aided delivery systems. Local Resource Centres are to be established for the delivery of the programme all over the country.

The School is looking for computer connectivity with all these local resource centres such that it is possible to download library material and other data from the headquarters at Delhi to the resource centre and vice-versa. The School requires the commissioning and installation of this network and connectivity between Delhi (HQ) and the local resource centres country wide to be finalised by April 1997.

Organisations having such capabilities in both software and hardware terms may send their details to the Director, SOMS, IGNOU, Maidan Garhi, New Delhi-110068, Ph:6853410, 6865923 to 5933, Ext.1109, Fax:6960863, 6857062 E-mail:ignou@giasdl01.vsnl.net.in with full details within 15 days of the appearance of this advertisement.

MAJOR ECONOMIC

Exchange Rates to the Dollar (annual Average)

	Currency	1990	1991	1992	1993	1994	1995
South Asia							
Bangladesh	Taka	34.6	36.6	39.0	39.6	40.2	40.0
Bhutan	Ngultrum	17.5	22.7	25.9	30.5	31.4	32.4
India	Rupee	17.5	22.7	25.9	30.5	31.4	33.5
Maldives	Rufiyaa	9.6	10.3	10.6	11.0	11.6	11.8
Nepal	Rupee	29.4	37.3	42.7	48.6	49.4	50.0
Pakistan	Rupee	21.7	23.8	25.1	28.1	30.6	31.6
Sri Lanka	Rupee	40.1	41.4	43.8	48.3	49.4	51.3

Real Effective Exchange Rates (1990=100)

	1990	1991	1992	1993	1994	1995
South Asia						
Bangladesh	100.0	96.9	91.5	87.9	85.7	84.2
Bhutan	...	...	...	...	...	...
India	100.0	84.0	78.1	71.5	71.9	71.3
Maldives	...	...	...	...	...	...
Nepal	100.0	135.5	174.5	205.9	217.0	229.9
Pakistan	100.0	97.2	95.1	90.9	91.5	90.0
Sri Lanka	100.0	104.4	104.6	104.2	104.3	99.0

Government Expenditure (per cent of GDP)

	1990	1991	1992	1993	1994	1995
South Asia						
Bangladesh	16.3	15.7	15.1	16.3	16.7	18.2
Bhutan	37.3	29.0	36.7	37.2	43.8	52.2
India	19.7	18.1	17.4	17.7	17.2	16.8
Maldives	53.6	63.4	60.6	55.9	41.8	...
Nepal	19.0	19.6	17.7	18.0	16.8	17.5
Pakistan	25.9	25.6	26.5	26.2	24.1	24.2
Sri Lanka	28.0	29.5	27.2	27.2	27.2	28.8

Source: Asian Development Outlook 1996 & 1997, Asian Development Bank 1996.

NDICATORS : SAARC Countries - IV

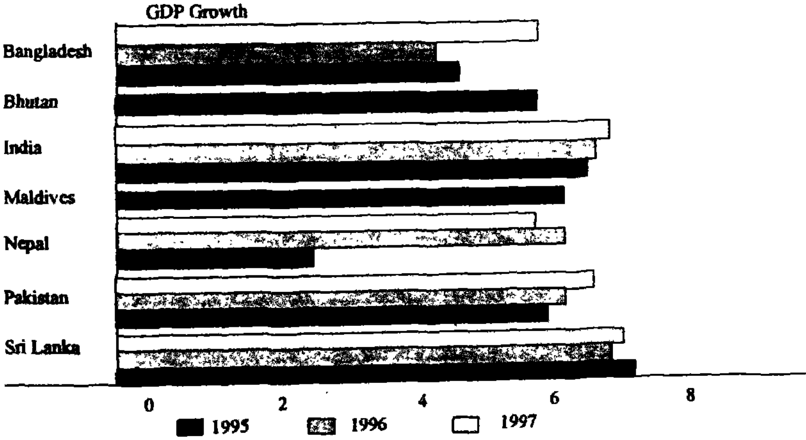
Total Revenue (per cent of GDP)

	1990	1991	1992	1993	1994	1995
South Asia						
Bangladesh	8.9	9.1	10.4	11.1	11.3	11.6
Bhutan	19.0	18.1	18.2	22.2	18.9	19.2
India	17.5	17.0	15.6	16.3	16.5	15.3
Maldives	36.1	36.7	36.3	33.6	30.5	...
Nepal	9.0	8.9	9.0	8.8	9.8	11.1
Pakistan	18.6	16.1	19.1	18.2	18.7	18.2
Sri Lanka	20.9	20.6	20.3	19.7	19.0	20.8

Overall Budget Surplus/Deficit of Central Government

(per cent of GDP)

	1990	1991	1992	1993	1994	1995
South Asia						
Bangladesh	-7.4	-6.5	-4.7	-5.4	-5.5	-6.5
Bhutan	-7.8	16.5	6.2	19.2	26.2	29.5
India	-8.3	-5.9	-5.7	-7.5	-6.5	-5.3
Maldives	-11.4	-13.3	-16.8	-16.1	-6.6	-10.9
Nepal	-10.0	-10.7	-8.6	-9.2	-7.0	-6.5
Pakistan	-6.5	-8.7	-7.4	-8.0	-5.4	-6.0
Sri Lanka	-9.7	-11.7	-7.4	-8.4	-10.0	-9.5



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Indian Contribution to Mathematics

"The idea of expressing all quantities by nine figures whereby is imparted to them both an absolute value and one by position is so simple and this very simplicity is the reason for our not being sufficiently aware how much admiration it deserves", observed French mathematician Laplace. He, in effect, acknowledged that the arithmetic of zero was entirely "Hindu contribution" to the development of mathematics. He was speaking at a seminar on "The Concept of Shunya" in New Delhi. Indian numbers formed the basis of what were now popularly known as the international figures, speakers asserted. The name "Arabic numerals", they argued was, therefore, *a misnomer*.

In a key paper, "Shunya in speculative thought", Mr. G.C. Pande, Chairman of Allahabad Museum, said the Vedic cosmology in its attempt to understand the source of creation of the universe, described it as Being, or *Sat*. But an alternative view was that creation originated from non-being or Nihil *(asat)*. The Vedantic view derived all multiplicity from an original unity and in this process relegated the multiplicity of empirical reality to an illusionary status — mere name and form. Thus *Shunya, Asat, Avyakta* and *Nirguna* were colinear terms which means negate the empirical reality, he explained.

In a paper on "Zero in the Mathematical System of India", Prof. R.C. Gupta, President of the Association of Mathematics Teachers in India, said literary and other evidence from Buddhist and Jaina texts showed that the decimal place-value system with zero symbol was already in use in India in the beginning of the present era. "The decimal place value system with zero gave easier methods of computation and arithmetical techniques and the whole world adopted it slowly", he added.

Dr. B. Chaki, scientist at NMLRC, Calcutta, in his paper, stated that in India, right from the Vedic times when a full-fledged decimal numeration had established itself, the spelling out of full numbers had been felt as a *tedium and efforts were made to* relieve it. The difficulty was felt all the more during later ages, especially when the numbers were long and cumbersome to pronounce.

Referring to the practice of committing to memory every word and expression peculiar to the Vedas, Dr. Chaki said it had percolated to the other branches of literature as well. The evolution of the word and alphabetical numerals was a device to counteract the cumbersomeness and, at the same time, enabled one to retain long numbers of twenty and thirty digits slipping from *memory*.

Mr. A.K. Beg, Associate Editor of the Indian Journal of the History of Science, said that the Vedic system of numeration was expressed with the help of a decimal scale but after the 5th Century, place-value systems became so common that its reference was not needed for numbers expressed in work or symbol. "The decimal place-value system was so simple and novel that it caught the imagination of all classes of people", he pointed out.

Prof. J.N. Kapur of the Jawaharlal Nehru University, said that "mathematics developed by constant abstraction and generalisation and every generalisation of mathematics has required a generalisation of the concept of zero". He added that the whole history of mathematics could be regarded as a history of man's effort to come to grips with all ramifications of the concept of zero and the associated concepts of infinity.

In his paper on "A journey from the Ponderable to the Imponderable," Mr. R Sathyanarayana said, "human consciousness does not seem to be structured for direct cognition of *Shunya*. Zero is, however, a unique mathematical reality, being both number and non-number. It marks the transition between the positive and the negative and is the point from which all existence emerges and to which it finally returns. Thus, zero signifies latency or potentiality of existence or reality. Nature abhors a vacuum".

The seminar was inaugurated by Dr. S. Varadarjan, Director, INSA. The Academic Director of the IGNCA, Dr. Kapila Vatsayayan gave the convenor's address. Organised by the Indira Gandhi National Centre for the Arts (IGNCA) and the Indian National Science Academy (INSA), the three-day seminar was attended by philosophers, scholars and scientists from India and abroad. It attempted to document the many facets of the discovery of *Shunya* in mathematics and astronomy and its ramifications in philosophy and the arts.

New Courses at Madras Varsity

The Madras University is reported to have decided to institute a Department of Bio-technology and the M.Sc. degree programme with four semesters (18 credits including four for laboratory work).

To keep pace with the technological developments, the contents drawn up for the programme include subjects such as genetic engineering and industrial microbiology. The final semester has Marine Biotechnology and Environmental Biotechnology as optional subjects, to use fully the long coastal belt for studying its attendant environmental problems.

The university also decided to accept the Senate and Syndicate resolution to institute a new M.Sc. Computer Science degree programme (Semester System) to be offered only by affiliated arts and science colleges.

A new Bachelor of Computer Applications programme is to be offered by the Institute of Correspondence Education from the next academic year (1997-98). A Diploma course in Rural Development and Management (full-time and part-time) and a certificate course in rural development and management (full-time) are also to be introduced to take effect from the next academic year.

Dr. P.K. Ponnuswamy, Vice-Chancellor, pointed out that the University was also instituting new courses such as Bachelor of Fine Arts in Painting and Drawing, Bachelor of Fine Arts in Print Making, Master of Fine Arts in Sculpture and Master of Technology in Traditional Architecture and M.Sc. in Computer Science.

Programme on AIDS Education

A four-day training programme on AIDS Education for the NSS Programme Co-ordinators/Officers of J.P. University, Chapra, B.R.A. Bihar University, Muzaffarpur, L.N.M. University, Darbhanga, K.S.D. Sanskrit University, Darbhanga and Vinoba Bhave University, Hazaribagh.

Dr. K.K. Nag, Vice-Chancellor, welcomed the participants and explained the objectives of the AIDS Training Programme. He also explained NSS activities towards social and community development and details about the AIDS virus.

Dr. J.K. Dhan, Principal, St. Columba's College, in his presidential address, apprised the participants of the evils of AIDS and expressed his gratitude to the NSS Cell of Vinoba Bhave University for organising such type of Training Programme.

Mr. K. Vasavan, Asstt. Programme Adviser, NSS Regional Centre, Patna, exhorted the university community to match the task of controlling AIDS menace.

Prof. M.L. Das of St. Columba's College, in his keynote address, spoke on the topic "Taking the Bull by Horns : National Challenges and Commitments — Role and Responsibilities of Students". Prof. Das divided his talk in four sections. The first section dealt with the student power as a new social force of incalculable significance; the second part examined the objective of higher education and its relationship with societal and national development; the third part dealt with the context of U.T.A. Project & other U.G.C., H.R.D. projects in demanding students involvements; and the last part dwelt on how the student community could be effective in building awareness among the masses with regard to the challenges of AIDS in particular and how the monitoring of AIDS information was to be done with great care and caution, keeping in view the social morals, ethos and traditional wisdom.

The topics discussed included (i) AIDS and Women; (ii) The Sexually Transmitted Diseases & AIDS; (iii) AIDS/STD — Its Psychological Impact in Indian Society; (iv) The Basic Facts and Misconception regarding AIDS; (v) AIDS as a Global Problem; (vi) Signs, Symptoms and Prevention of AIDS & Drug Abuse; (vii) Pathological Aspect of AIDS — Symptoms, Tests and Diagnosis; (viii) Case Study — The Psychology of AIDS Victims; (ix) The Medical Truth of AIDS; and (x) Role of NSS in AIDS Awareness and Implementation of U.T.A. Project.

Saraswati Samman

The K.K. Birla Foundation has instituted four awards in the field of literature. These are : the Saraswati Samman (for all Indian languages including Hindi and Sanskrit for which there are separate awards also), the Vyas Samman (for Hindi), the Bihari Puraskar (for Hindi writers of Rajasthan) and the Vachaspati Puraskar (for Sanskrit).

The Saraswati Samman is

given every year to an outstanding literary work written in any Indian language mentioned in Schedule Eight of the Constitution of India by an Indian citizen during the last 10 years preceding the specified Samman year. It carries an award of Rs. 5 lakhs and a citation.

For the 1996 Saraswati Samman, the Foundation has selected *Sher-e-Shor-Angez* (Urdu), a highly acclaimed work on literary criticism by Shri Shamsur Rahman Faruqi.

The theoretical and practical ideas put forward by Faruqi in *Sher-e-Shor-Angez* have far reaching applications on the theory of interpretation, the theory of modernism, inter-textuality, the value of historicism as opposed to the strength of close textual analysis, the validity of reader response and contemporary reception, and many other allied matters. The book is thus a major exercise in theoretical, practical, comparative-historical aspects of criticism and a rediscovery of the classical poetics in the Indian tradition. It is a post-colonialist evaluation of current critical ideas about classical poetry in Urdu.

Eminent Scientist Award

Dr. T.S.R. Prasada Rao, Director of the Indian Institute of Petroleum, has been awarded the Catalysis Society of India's eminent scientist award for 1996 for his yeoman contribution to the business, science and technology of catalysis. This award is the highest official honour for catalysis scientists in the country.

Dr. Rao has been representing India in the Council of International Association of Catalysis Societies for the last six years and was recently re-elected in Baltimore, United States, for another three years. Dr. Rao also has the distinction of being the first Indian to be selected on the editorial board of "Applied Catalysis", one of the most prestigious journals on the subject.

Modernizing Amravati Varsity Library

Dr. S.T. Deshmukh, Vice-Chancellor, Amravati University, declared that the university library should be developed and modernised on the lines of the latest information technology techniques adopted by modern libraries for storage and retrieval of information generated by the library for effective communication of information to the students, researchers, and the members of the teaching staff of the University. In view of this, the University constituted an expert committee to make recommendations in this regard.

The committee deliberated on Functions and Objectives of the university library, Present situation, Library building, Library Staff pattern, Library Finances, Acquisition Policy for Books & Journals, Resource Sharing, Departmental Libraries, Information Library Network and Automation, etc and has recommended an integrated library and information system on modern lines by way of setting up modernizing University Library at the Campus and by instituting a Computer network connecting all the libraries in Local Area Network (LAN), Regional Network, National Network and also with the International data banks and data bases.

News from Agricultural Universities

Training Programme on Instructional Materials

Dr. A.L. Chaudhary, Chairman, Agricultural Scientists Recruitment Board (ASRB) called upon educational policy planners and teachers community to make the modern educational system more relevant to Indian conditions by including in it the traditional *Gurukul* as also the western system of education. He was speaking as Chief Guest at the valedictory function of a 3-week training programme on Production of Instructional Material for Teaching at the Chaudhary Charan Singh Haryana Agricultural University (CCSHAU). He said that in the fast developing world more emphasis is laid on western system of education. Hence for the harmonious and all round development of the young generation as also to retain the element of *Bhartiyata*, it was imperative that both systems of education were considered. Dr. Chaudhary appealed to the teachers to make their teaching effective by using audio-visual aids.

Prof. J.B. Chowdhury, Vice-Chancellor, in his presidential address, said that in the modern explosion of knowledge, teachers had to abreast themselves with the latest technologies. Hence the development of human resources in all educational institutions was the need of the day.

Dr. I.J. Singh, Director, AAREM, while welcoming the Chief Guest disclosed that during this period the participants were trained in preparation of slides, transparencies, video-film, charts, posters as also script writing and communication skills.

Over 25 participants from all over India attended this training programme organised by the Academy of Agricultural Research and Education Management (AAREM) of CCSHAU.

Seminar on Veterinary Education

Dr. Raghuvansh Prasad Singh, Union Minister of State for Animal Husbandry and Dairying, revealed that during the 9th Five Year Plan, 60 thousand artificial insemination centres would be established in the country. He was speaking after inaugurating a 2-day seminar on Veterinary education and research at Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar recently.

The Minister said that the strides made by the nation in the livestock sector, had been gratifying in the past. However, in view of the increasing demand there was need to improve their production and productivity. He said presently the per capita availability of milk in the country was 197gms against the required quantity of 220gms as per medical standards.

Equating animal husbandry with agriculture, Dr. Singh said that no nation could flourish ignoring its livestock. He said livestock was the solution to the problems like unemployment, malnutrition and wasteland development. So, realising its importance the central government had decided to double the budget for this sector in the 9th five year plan, he said.

He further revealed that 1 lakh more dairy co-operatives would be set up in the next plan in the country.

The Minister called upon the veterinarians to reorient their researches for meeting the future challenges. He also urged that indigenous breeds of livestock should be conserved and their productivity increased.

Sardar Harminder Singh, State Animal Husbandry Minister, said that Haryana government had made provision in the 9th Five Year Plan to boost livestock sector in the state. Steps were being initiated to preserve the germ plasm of the murrah buffaloes and about 10 lakh buffaloes of this breed were being exported to other parts of the country and abroad, he added.

Prof. J.B. Chowdhury, Vice-Chancellor, CCSHAU, who presided, said that animal husbandry had assumed significance in the light of decreasing land holdings due to fast industrialisation and urbanisation. In the changing scenario the veterinarians could play a vital role in developing rural economy and providing livelihood to the landless labourers, small and marginal farmers by way of improving the livestock and properly guiding the vulnerable section of the rural populace. Prof. Chowdhury hoped that the events planned by the college for the Golden Jubilee Year would provide an opportunity of interaction among experts and professionals to work out plans as to how livestock could ameliorate the poor and rural masses in the years ahead.

Dr. A.L. Chaudhary, Chairman, Agricultural Scientists Recruitment Board (ASRB), in his address said that to meet the increasing demand of animal production, it was imperative that veterinarians and unemployed youth were exposed to self employment. He demanded introduction of Business Management courses and release of adequate funds for development of animal husbandry. Likewise, he said that equitable distribution of the benefit of development among all sections was essential. Speaking on establishment and development of Veterinary institutions in the country he said that over the years a strong national agricultural research system had been established.

Programme in Research Management

To make agriculture more profitable it was essential that a strong linkage be developed with the industry, said Mr. V. Umashankar, Registrar, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU). He said that Indian agriculture which had been contributing to the tune of 30 per cent to the GNP and giving direct or indirect employment to about 70 per cent population, had not received much attention, resulting in poor profits to the farmers. He was speaking as chief guest at the inaugural function of a faculty development programme in research management conducted by the Academy of Agricultural Research and Education Management (AAREM) in Hisar recently.

Lamenting the poor management practices being followed by the Indian farmers in crop management and the allied jobs, Mr. Umashankar called upon the scientists to educate the farmers in this regard. He urged them to form management teaching as part of the extension education programmes conceived for the trainings of the farmers.

Dr. V.P. Singh, Director of Research, CCSHAU, revealed that the course had been designed to acquaint the researchers with the general agricultural scenario and to expose them to the concepts of agricultural research projects. They would also be familiarized with the application of project management techniques in the changing farming system.

The Director of AAREM, Dr. I.J. Singh said that since its establishment about 25 months ago, the academy had trained over four hundred scientists in education and research management.

Plant Genetic Centre

Union Agriculture Minister, Mr. Chaturanan Mishra called upon farm scientists to keep abreast of latest developments on the research front to face the stiff international competition and assured them that the government would provide necessary funds. He was inaugurating the new regional research station complex of National Bureau of Plant Genetic Research Resources (NBPGR) in Hyderabad recently. He said farm scientists had a big role to play as it had been estimated that nearly 60 per cent of the global trade in the next two decades would be related to genetic engineering and bio-technology.

"India looks to agricultural scientists to see that in research matters, we don't lag behind," he said and added that his ministry had recently constituted two committees for upgrading the agricultural education and making agricultural research on par with world standards.

The Director-General of Indian Council of Agricultural Research (ICAR) Dr. R.S. Paroda, said that India had been identified as one of eight mega gene centres in the world and its gene bank was one of three largest gene banks. He said the regional station would collect, evaluate and conserve genetic diversity in southern region.

Management of Problematic Soils

Akola Chapter of Indian Society of Soil Science recently organised a State Level Seminar on Management of Problematic Soils at Dr. Panjabrao Krishi Vidyapeeth, Akola. Inaugurating the seminar Dr. M. Velayutham, Director, National Bureau of Soil Survey and Land Use Planning, Nagpur, explained the various problems of soils and the need for their management in obtaining sustainable agricultural production. Dr. G.M. Bharad, Vice-Chancellor, who presided, explained the utility of soil maps which he received on the occasion and suggested that soil mapping on micro level was essential as there were wide variations in soil properties from field to field. He stressed the need for adoption of watershed approach for conservation and management of natural resources.

We Congratulate ....

1. Lt. Gen. O.P. Kaushik (Retd.) who has been appointed Vice-Chancellor of Maharshi Dayanand University, Rohtak.

2. Dr. M.L. Ranga, who has been appointed Vice-Chancellor of Kurukshetra University, Kurukshetra.

3. Dr. S.B. Singh, who has been appointed Vice-Chancellor of G.B. Pant University of Agriculture and Technology, Pantnagar.

News from UGC

Countrywide Classroom Programme

Between 15th and 22th March, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

15.3.97

"Sun, Earth, Space, Environment - II : Sun and its Carona"

"The Indian Public Services Commissions: Their Role and Functions"

"Sea Weeds"

16.3.97

"The Good Doctor-I"

"Odissi : The Art of Expression - II Abhinaya"

18.3.97

"Electromagnetism-II"

"Bridging the Calorie Gap: Weaning Foods"

"Energy Flow-II"

20.3.97

"Lithium: A Metal of 21st Century"

"Coal-I: The Captive Sun"

"Film Appreciation: Film Criticism"

22.3.97

"A Date with Maths-I"

"Lost Childhood"

"Neem: A Miraculous Tree"

IInd Transmission

1.00 p.m. to 2.00 p.m.

15.3.97

"Estimating Predator and Prey Populations"

"Understanding Cinema-VIII:

Sound-III: Music"
"Cataract"

16.3.97

No Telecast

17.3.97

"Mangrove: Bio-diversity Spectrum"
"Question Time"
"Continental Drift"

18.3.97

"Ocular Leptospirosis"
"Corrosion in Industries: Causes and Control-I"
"Special Education for Disabled"

19.3.97

"The Art of Screen Printing"
"Qutab Shahi Architecture"
"Cousins and Distant Cousins-I"

20.3.97

"Kahankar: Ahankar, Abridge Version"
"Literature in Society Renaissance-V: A Conservation"
"Sight"

21.3.97

"Give me a chance"
"Elements of Non-Linear Mechanics"
"Mesembs: The Flowering Pebbles"

22.3.97

"Understanding Cinema-IX: Colour"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

17.3.97

"पर्यावरण प्रदूषण"
"काष्ठोंकन"

19.3.97

"तलाश - 2"

21.3.97

"मगरमच्छ"

News from Abroad

ICDE World Conference

The 18th Conference of the International Council for Open and Distance Education (ICDE) will be held at The Pennsylvania State University on 2-6 June, 1997. The theme of the Conference is — The New Learning Environment : A Global Perspective.

The Conference will explore the challenges and opportunities facing the global education community in this new environment. It will focus on the following daily themes : (i) The Changing Technology Environment; (ii) The New Educational Paradigm; (iii) Technology, Education, and Sustainable Development; and (iv) Opportunities for International Cooperation.

During discussion sessions, these themes will be examined within the context of the following interest areas : Primary Through Secondary School Applications; Technology Applications and Emerging Technologies; Research and Evaluation in Distance and Open Learning; Distance Education in Developing Countries; Organizational Issues: Faculty, Infrastructure, Institutional, and Regulatory Policies; Pedagogical Issues; Promotion and Marketing Strategies; Partnerships and Alliances; Workplace Training and Education; and Student/Learner Support.

Further details can be had from the ICDE Conference Secretariat, The Pennsylvania State University, 225 Penn State Conference Center Hotel, University Park PA 16802-7002, USA.

COL-ACU Tie Up in Distance Education

The Association of Commonwealth Universities (ACU) and Commonwealth of Learning (COL) intend to cooperate on offering several programmes for the benefit of Commonwealth higher education institutions.

Discussions are underway that would involve COL developing and co-ordinating orientation and training activities designed for CEOs and key staff of ACU member institutions that are conventional in nature but may be moving toward a dual-mode structure. COL would draw on its extensive experience in the field to provide a training framework that would address key issues such as : designing and developing distance education courses; using and integrating media in distance education; and planning and managing distance education.

COL and the ACU's Commonwealth Higher Education Management Service (CHEMS) have also agreed to collaborate on the development of a study of quality assurance practices in selected Commonwealth countries as a companion to the CHEMS publication, *The Real World of Performance Indicators: A review of their use in selected Commonwealth countries*. The new study would include Australia, Hong Kong, India, New Zealand and the United Kingdom and should be published by mid-1997.

COL has also agreed to collaborate with CHEMS on promoting the use of performance indicators by Commonwealth universities and on the development of distance education training materials for university administrators.

Information Management in Media Centres

B.S. Nigam*

K.L. Sharma. Current Information Retrieval — Manual for Media Persons. Delhi, Amar Prakashan. Pp. 202. Price Rs. 200/-.

With the exponential growth in the literature and increase in the number of newspapers, magazines, professional journals, pamphlets and books, the field of information management has witnessed tremendous changes in the last decade. The media establishments like newspapers, news agencies, publishing houses and television centres have also developed rapidly due to the awareness of the masses and the impact of electronic media. Particularly, the computer has changed the entire concept of information management. But the basic problems of management of library engaged in news preparation and dissemination remain challenging. The present book entitled *Current Information Retrieval : A Manual for Media Persons* is a unique contribution in the field of media libraries.

The role of the media library is entirely different from other academic libraries in the sense that it allows limited access to the readers and unlike university libraries it does not hesitate in providing the required information in physical form to the reader. The concept and usefulness of media library has been widely discussed in the beginning of the book. Times of India (TOI), New Delhi office has been taken as a case study for providing the information techniques applied in the media library. TOI New Delhi edition came into being in 1950 and from then onwards, started the development of the library which has become the best media library in the capital city of India.

Librarian has been classified as Journalist by the wage board and it is with this spirit that the media library remains part and parcel of the newspaper establishment. This book gives detailed account of the expectations, duties, norms, ethics and ultimately the functions of the media library.

A press library is always different in its collection of books, choice of books, services, rules and regulations, timings for opening and closing, holidays and in other respects. In its organization, the book deals with principles of media library organisation, keeping in view the fundamental laws of library science. For this, the author has quoted best library professionals in the world working in the media libraries of New York Times, The Times (London), International Herald Tribune, etc. With these comments, the book has become an authentic contribution.

Budgeting, building and equipment are yet another good approach of the treatise. Special type of reading tables and other major equipment have been properly discussed with the help of examples from foreign media libraries.

Photo collection and their management specially for retrieval, is a very difficult task before the librarians. The book covers a lot of suggestions for improving the photo services. The author could not devise any special scheme for the photo collection which is also a demand of the time. Another important feature of the book is the theme of automation. Microfilming technique has proved to be the best space saving device. The author has discussed all major aspects for planning and establishing a microfilming unit in the media library specially for newspapers. The Times of India library has this facility.

In all there are thirteen chapters, namely, Library in the fourth estate, *Press library organisation* — authority and personnel, Budgeting a press library, Press library — building and equipment, Press library administration, Press clippings — retrieval of current information, Information services in a press library, Indexing the news, Newspaper library acquisition, Reference books and reports, News photo files, Microfilming newspapers, and Press li-

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**Reader and Head, Department of Library and Information Science, Makhanlal Chaturvedi National University of Journalism, Bhopal-462 016.*

brary — automation and modernization. Besides these chapters, the thesaurus and classified list are also added chapters.

The author has also discussed Optical Storage and Retrieval (OSAR), paperless library, and standards for improving library services. The book undoubtly fills the gap of a manual needed specially for the media persons. The working journalists, newspaper offices and other media managers can start storage and retrieval of their collections. The book is priced at Rs. 200/- which is justified by the contents and the theme of the book. The book is bound to be a trend setter in the field of media libraries.

Press clippings are the backbone of the newspaper library. The author has rightly assumed that there is no book or any guiding manual for the management of clippings. Nor is there any scheme for the classification of the collected clippings. The book has dealt with this problem with enough experience at the author's command. A scheme of classification based on pure notations has also been devised by the author under the chapter Thesaurus. In fact the thesaurus is the essence of this book. More than three thousand indexing terms have been properly classified with the newly devised scheme. These terms have been further listed in the classified order. The indexing terms are in alphabetical order while the classified list is arranged without any order in the indexing terms. It would have been better if in the classified list, the notations could have been put first and followed by the terms these notations represent.

SCHOOL OF MANAGEMENT STUDIES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY

INVITES MANAGEMENT INSTITUTES TO BECOME PARTNERS IN ADVANCED LEARNING SYSTEM (PALS)

School of Management Studies (SOMS), IGNOU invites offers from Management Institutions, Training Institutes and organisation for establishing Partnerships in Advanced Learning Systems. School of Management Studies (SOMS) has started continuing education programme for Working Managers at all levels, which are offered as short term capsule programmes. These programmes would be offered through a network of Partners in Advanced Learning Systems, using technology aided delivery system.

The school will be offering 20 different capsules of management courses with relatively relaxed entry qualifications (without entrance test). Each built around one specific functional specialisation. The target participants would be working Managers/Executives. The credits earned by completing these capsules can also be transferred towards earning an MBA degree. Complete counselling support for these programmes will be provided through interactive teleconferencing network by School of Management Studies.

The PALS would act as local resource centres for the School of Management Studies for the above programmes and enrol learners in that area. They are expected to provide the complete services of admission, organising for teleconference sessions, conduct to examination, etc. The specifics of the resources to be provided by the PALS would include :

- Faculty resources to act as facilitators/mentors for SOMS students
- Physical infrastructure for accommodating SOMS students
- Teleconference receive site infrastructure:
  a. Dish antena for receiving teleconferencing session
  b. E-mail
  c. Adequate computer hardware facilities for connectivity

SOMS offers the following facilities to its prospective partners for participating in the networked learning programme:

- Complete computer connectivity through server with the project office at SAMS, IGNOU
- Electronic library access through data transfer mechanism (full text articles from 500 + management journals, to be updated six monthly).
- Internet/Indonet connectivity
- Self instructional material aided with learner and instructor's manuals, along with audio and video materials associated with capsules
- Complete promotional effort for the programme through mass media
- Faculty development effort for the faculty at PALS
- On-line admission and examination
- 40% fee sharing with PALS

The interested management institutions may write with full details about the institute and the infrastructure available with them to: The Director, SOMS, IGNOU, Maidan Garhi, New Delhi-110068, Ph:6853419, 6865923 to 5932, Ext.1109, Fax:6960863, E-mail:ignou@giasdl01.vsnl.net.in **within one month of appearance of this advertisement.**

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

HUMANITIES

Philosophy

1. Anil Kumar. **Bharatiya chintan mein manavvad : Visheshatah Tagore, Gandhi evam Nehru ke chintan ke pariprekshya mein : Ek tulnatmak evam sameekshatmak adhyayan.** BHU. Prof R R Pandey, Head, Department of Philosophy *and Religion, Banaras Hindu University, Varanasi.*

2. Choubey, Om Prakash. **Spinoza ke darshan tatha Geeta mein rahasyavad : Ek tulanatmak adhyayan.** *BHU.* Dr K P Mishra, Lecturer, Department of Philosophy, Banaras Hindu University, Varanasi.

3. Das, Kaushal Kishor. **Brahmadwait ke pariprekshya mein Vigyanvad ka anusheelan.** BHU. Dr R S Tripathi, Sr Lecturer, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

4. Durga Kumari. **Sahityakar Shri Vaidyanath Mishra, Nagarjuna evam Yatri ke sahitya mein rajniti kee vivechana.** Mithila.

5. Gautam, Atma Ram. **Chatuhsutraebhamatyah : Sameekshatmakam adhyayanam.** BHU. Dr S S Shastri, Prof, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

6. Jain, Prabhavati. **Swami Samantbhadra ka darshanik anuchintan.** *Durgavati. Dr J P Shukla, Vice Chancellor, Rani* Durgavati Vishwavidyalaya, Jabalpur.

7. Kamdar, Pravin C. **Business ethics and social responsibility : Jain perspectives.** D.Litt Jain Vishva Bharati. Dr Dasrath Singh, Prof and Head (Retd), Department of Non-violence and Peace Research, Jain Vishva Bharati Institute, Ladnun.

8. Mishra, Ashok Kumar. **Srimad Bhagwat Gita mein achar darshan : Ek sameekshatmak adhyayan.** BHU. Dr M R Mehta.

9. Nandi, Amita. **A study of philosophical behaviourism with special reference to Gilbert Ryle.** Burdwan. Dr Gopal Chandra Khan, Prof, Department of Philosophy, University of Burdwan, Burdwan.

10. Prem Saheb. **Brahmasutra Shanker Bhashy Tritiyadhyaya ka sameekshatmak adhyayan.** *BHU. Prof S S* Shastri, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

11. Saraogi, Rajeev Kumar. **Akatma manav darshan : Ek sameekshatmak adhyayan.** BHU. Prof K N Mishra, Department of Philosophy and Religion, Banaras Hindu University, Varnasi.

12. Sehgal, Poonam. **Samagra anubhuti : Sarvapalli Dr Radhakrishnan ke darshan ke vishishta sandarbh mein.** BHU. Dr D A Gangadhar, Lecturer, Department of Philosophy, Banaras Hindu University, Varanasi.

13. Shrivastava, Anju. **Shankarottar Advait Vedant mein Chaitanya kee avadharna : Vachaspati Mishra evam Swami Vidyaranya ke vishesh sandarbh mein.** *Durgavati. Dr D N* Shukla, Department of Philosophy, Rani Durgavati Vishwavidyalaya, Jabalpur.

14. Shukla, Rajneesh Kumar. **Kant ka saundarya shastra : Ek sameekshatmak adhyayan.** BHU. Prof R R Pandey, Head, Department of Philosophy, Banaras Hindu University, Varanasi.

15. Srikrishna, M. **Technological world view and culture change.** Osmania. Prof P Pramada Devi, Department of Philosophy, Osmania University, Hyderabad.

16. Tiwari, Dheerendra Kumar. **Gandhi evam Vivekanand ke darshan mein Ishwar kee avadharana : Ek tulanatmak adhyayan.** BHU. Dr K P Mishra, Lecturer, Department of Philosophy, Banaras Hindu Uniersity, Varanasi.

17. Tripathi, Suresh Mani **Varah Puran ka sameekshatmak adhyayan.** BHU. Dr R S Tripathi, Sr Lecturer, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

Religion

1. Deva, Mohd Farooq. **Sir Syed aur Shibli : Taleemee aur samaji khidmat ka taqabulee mutalia.** Jamia Hamdard. Dr Basir Ahmad Khan.

Fine Arts

1. Padmini, P V. **Bhartiya kala mein Yunani-Romak devata evam abhipraya.** BHU. Prof R Dasgupta.

Drawing & Painting

1. Keswani, Radha. **Italy kee punerjagaran chitrakala kee sanskritik evam kalatmak prishthabhumi.** BHU. Prof S Dasgupta, Department of History of Art, Banaras Hindu University, Varanasi.

2. Nizami, Zohra. **Animal and birds painting in Mughal miniatures.** Garhwal. Dr A V Verma.

Music

1. Khanwalkar, Smita. **Kafi thaat ke prachalit evam aprachalit ragon kee bandishon dwara rag swaroop darshan.** Devi Ahilya. Dr Ramesh Tagre, Head, Department of Music, Govt Nutan Girls P G College, Indore.

2. Satish Kumar. **Kangra ke lokgeeton mein viksit ragon ka vishleshnatmak adhyayan.** HP.

Language & Literature

English

1. Bhoomkar, Santosh M. **Philip Larkin : A study in radical pessimism.** Marathwada. Dr V R N Prasad, Department of English, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

2. Brahmananda Chary, B. **The image of child in the fiction of Mulk Raj Anand, R K Narayan and Anita Desai.** Osmania. Prof B Gopal Rao, Reader, Department of English, Post Graduate College, Secunderabad.

3. Chaturvedi, Lata. **Dickens and romanticism : Continuity and change.** BHU. Dr A Sircar, Reader, Department of English, Banaras Hindu University, Varanasi.

4. Krishna Murthy, M. **The concept of Asramas in the novels of R K Narayan : A select study.** Andhra.

5. Mayadevi, K. **Regionalism in the novels of Thomas Hardy.** *Durgavati. Dr P K Shrivastava, MIG-16, Shivnagar, Damoh* Naka, Jabalpur.

6. McFarland, Numreta. **Expression of feminine sensibility in the novels of Anita Desai.** HS Gour. Prof R S Pathak, Department *of English, Dr Harisingh Gour Vishwavidyalaya, Sagar.*

7. Santosh Kumar, P V. **A study of Sri Aurobindo's Savitri in the light of Bhagavad Gita.** Calicut. Dr N Ramachandran Nair, Reader, Department of English, Calicut University Centre, *Tellicherry.*

8. Sharma, Anita. **Winter, old age and death in the poetry of William Carlos Williams.** HP.

9. Sree Ramulu, C. **A study of Indian narrative techniques with reference to R K Narayan, Anita Desai and G V Desani.** Osmania. Dr M Sivarama Krishna, Department of English, Osmania University, Hyderabad.

French

1. Chaturvedi, Prayas. **Etude comparative des proverbes Hindi et des proverbes Francais.** BHU. Prof Brabhakar Jha, Head, Department of French Studies, Banaras Hindu University, Varanasi.

Sanskrit

1. Agarwal, Sunita. **Mahabharat ke Anushasan Parva ka sanskritik adhyayan.** Garhwal. Dr Ram Prakash.

2. Agrawal, Shakuntala. **Mahabodhi vansh ka tulanatmak adhyayan.** BHU. Dr R P Dwivedi, Reader, Department of Sanskrit, Banaras Hindu University, Varanasi.

3. Barman, Ranjit Kumar. **Adwait Vedant kee drishti se Brihadaranyak Upanishad ka sameekshatmak adhyayan.** BHU. Dr K K Sharma, Reader, Department of Vedic Darshan, Banaras Hindu University, Varanasi.

4. Brijendra Kishor. **Balramayanasya sameeksha.** Garhwal. Dr D P Tripathi.

5. Chauhan, Yashwant. **A comparative study of Swastha Vritta and Yoga with the modern preventive and social medicine.** BHU. Dr I P Singh, Lecturer, Department of Basic Principles, Institute of Medical Sciences, Banaras Hindu University, Varanasi.

6. Dixit, Sushma Rani. **Atharva Vediya mantron mein arogya.** Durgavati. Dr M L Purohit, Department of Sanskrit, Rani Durgavati Vishwavidyalaya, Jabalpur.

7. Dwivedi, Ashok Kumar. **Valmikiya Ramayan mein kavya tattva.** BHU. Dr S D S Chaturvedi, Reader, Department of Sahitya, Banaras Hindu University, Varanasi.

8. Jain, Anil Kumar. **Sahityacharya Dr Panna Lal Jain virchit Chintamani ka sameekshatmak adhyayan.** HS Gour. Dr Bhagchandra Jain Bhagendru, Secretary, M P Sanskrit Academy, Sanskrit Bhavan, Vanganga, Bhopal.

9. Joshi, Shashi. **Sanskrit sahitya mein Garhwali sanskriti : Ek anusheelan.** Garhwal. Dr J K Godiyal.

10. Kamek, Bamroong. **Cultural study of the Atharvaveda Samhita.** *BHU. Prof V K Verma.*

11. Kaushik, Durga Sharan Chand. **Mahabharat mein smritiperak samagri ka adhyayan.** BHU. Prof Lallanji Gopal and Dr Saraswati Singh.

12. Maurya, Shitla Prasad. **Hathayoga ke katipaya abhyason ka sharir evam man per prabhav ka adhyayan.** BHU. Dr L D Dwivedi, Reader and Head, Department of Ayurveda Samhita, Banaras Hindu University, Varanasi.

13. Mohapatra, Chakrapani. **A comparative study on Kalidasa and Bhavabhuti as play wrights.** Sambalpur. Dr Dinabandhu Kar, Reader, Department of Sanskrit, Panchayat College, Bargarh.

14. Narayana, T Keshava. **A comparative study of the commentareis of Sayana and Dayananda on Asyavamiya Purusha and Nasadiya Suktas.** Osmania. Prof M Gopal Reddy, Department of Sanskrit, Osmania University, Hyderabad.

15. Pandey, Santosh Kumar. **Katha evam Shwetashwetar Upanishad ka tulnatmak adhyayan.** BHU. Dr R S Chaturvedi, Reader, Department of Sanskrit, Banaras Hindu University, Varanasi.

16. *Pandey, Vivek.* **Vastupal kee kritiyon ka sameekshatmak adhyayan : Naranarayananand Mahakavya ke vishesh sandarbh mein.** BHU. Dr S L Jain, Reader, Department *of Sanskrit, Banaras Hindu University, Varanasi.*

17. *Ratna, Tulika.* **Taittiriya Brahman mein prapt nirvachanon kee sameeksha.** BHU. Dr K C Dave, Lecturer, Department of Veda and Dr Usha Sharma, Lecturer, Department of Sanskrit, Banaras Hindu University, Varanasi.

18. Sarveshwar Prasad. **Mahakavi Kalidas evam Mahakavi Venkatnath : Ek tulnatmak adhyayan.** Garhwal. Dr J K Godiyal.

19. Sethumadhavan, K. **Principles of plot selection in Indian architecture.** Calicut. Dr M Santhichandrakamath, Prof, Govt Brennen College, *Tellicherry.*

20. Shailendra Narayan. **Vishnupuran ka anusheelan.** Garhwal. Dr D P Tripathi.

21. Sharma, Sudesh Kumar. **Atharva Veda ke vishesh pariprekshya mein Manusmriti ka sanskritik adhyayan.** *HP.*

22. Shyam Singh. **Ramayan kaleen shiksha evam adhunik shiksha : Ek tulnatmak adhyayan.** Garhwal. Dr J K Godiyal.

23. Singh, Pushpa. **Amar Chand Suri krit Bala Bharat : Ek**

parisheelan. BHU. Dr P D Singh, Lecturer, Department of Sanskrit, Banaras Hindu University, Varanasi.

24. Singh, Sheela. **Draupadi kathanak ka Jain aur Hindu sroton ke adhar per tulanatmak adhyayan.** BHU. Dr R P Dwivedi, Reader, Department of Sanskrit, Banaras Hindu University, Varanasi and Dr A K Singh.

25. Srivastava, Ranjana. **Anand Kand Champu ka sameekshatmak evam tulnatmak adhyayan.** BHU. Dr P D Singh, Lecturer, Depatment of Sanskrit, Banaras Hindu University, Varanasi.

26. Sunita. **Ekadas'o Panisad ke kriyarupe : Ek bhashika adhyayan.** Dayanand Rohtak. Dr Usha.

27. Tejvir Singh. **Kaahikavritti Shashthadhyasttha padkrityon ka vivechanatmak adhyayan.** Dayanand Rohtak. Dr Yananveer Dahiya.

28. Tiwari, Shiv Kumar. **Kalidas ke kavyon mein dharm and darshan.** BHU. Dr K D Tripathi.

29. Upadhyay, Indira. **Shrimad Vidharanyakrit jeevanmukti vivek ka alochnatmak adhyayan.** Garhwal. Dr Ram Prakash.

Punjabi

1. Singh, Umesh Kumar. **Guru Nanak Dev aur Sant Ravidas kee kavita ka tulanatmak adhyayan.** JNU. Dr S P Sudhesh, Assoc Prof, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

Hindi

1. Agrawal, Ritu. **Lok mangal kee avadharana aur Tulsidas.** BHU. Dr S N Pandey, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

2. Ahmed, Zeenat. **Hindi aur Assamiya ke Mirgawati sajnyak kavyon ka tulnatmak adhyayan.** Manipur. Prof K N Prasad 'Magudh', Department of Hindi, Manipur University, Imphal.

3. Amita. **Ramcharit Manas mein lok jeewan.** BHU. Dr A Pradhan.

4. Archana. **Himachali lok sahitya mein Ram aur Krishna kee awadharna.** Garhwal. Dr Hari Mohan.

5. Bhatt, Hemlata. **Chandra Sen Virat : Vyaktitva evam rachnatmakta ka anusheelan.** HS Gour. Dr Shahjad Qureshi, Shri Neelkantheshwar Govt P G College, Khandwa.

6. Choubey, Devendra Kumar. **Marginal people in contemporary Hindi short stories, 1970-90.** JNU. Prof M Pandey, Assoc Prof, Centre of Indian Languages, Jawaharlal Nehru University, New Delhi.

7. Choubey, Leena. **Acharya Nand Dulare Vajpayee : Chintan aur sameeksha drishti.** HS Gour. Dr Rajmati Diwakar, Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

8. Deshmukh, Arvind. **Hindi laghu katha : Srot, parampara aur vikas.** Osmania. Prof Lila Jyoti, Department of Hindi, Osmania University, Hyderabad.

9. Dharasurkar, Pratibha R. **Athaven dashak kee Hindi kahani.** Marathwada. Dr S M Suryawanshi, Head, Department of Hindi, Deogiri College, Aurangabad.

10. Ghosh, Hari Singh. **Bundelkhand ka aitihasik kavya ka mulyankan.** Awadhesh. Dr R R Bachakaiya, Prof, Department of Hindi, Maharaja College, Chhatarpur.

11. Giridhar Singh. **San 60 ke bad kee kahaniyon mein madhyavarg.** BHU. Dr Balraj Pandey, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

12. Jain, Kamalesh. **Amritlal Nagar ke upanyason mein samajik chetana.** Burdwan. Dr Vidyadhar Mishra, Reader, Department of Hindi, University of Burdwan, Burdwan.

13. Jain, Munni. **Hindi gadya ke vikas mein Jain Manishi Pt Sadasukha Dasjee ka yogdan.** BHU. Dr Indumati Singh, Reader, Department of Hindi, Mahila Mahavidyalaya, Banaras Hindu University, Varanasi.

14. Jain, Shakuntala. **Desh vibhajan ka sandarbh aur Hindi katha sahitya.** Vikram. Dr Jai Kumar Jalaj, Prof (Retd), 30, Indira Nagar, Ratlam.

15. Kesho Ram. **Pandit Lakhmi Chand-Vyakti, vastu aur kala.** Dayanand Rohtak. Dr Ram Sajan Pandey, Lecturer, Department of Hindi, Maharshi Dayanand University, Rohtak.

16. Mahalakshmi, Venkata. **Mohan Rakesh aur Baliwada Kantha Rao kee kahaniyon mein prastut samajik yatharth : Ek tulanatmak adhyayan.** Andhra.

17. Maithani, Dharma Nand. **Garhwal ka Chamoli Janpad tatha uska lokdharmee sahitya.** Garhwal. Dr Uma Maithani.

18. Mandhana, Shivratan Nandlalji. **Navam dashak kee kahaniyon ke patra.** Marathwada. Dr Dhanraj Mandhana, Prof and Head, Department of Hindi, Balbhim College, Beed.

19. Maurya, Kanchan. **Athven dashak kee Hindi kahani : Swaroop aur samvedana.** BHU. Prof T Singh.

20. Meetei, Akoijam Narendrajit. **Manipur upatyaka ke pramukh sthan jatha gram namon ke bhashashastriya adhyayan.** Manipur. Dr Lambodar Jha, Department of Hindi, Manipur University, Imphal.

21. Mishra, Roshni. **Maithili Sharan Gupta ke kavya mein nari kee asmita aur atmabodh.** Ravishankar. Dr (Smt) Satyabhama Adil, Prof, Department of Hindi, Govt D B P G Girls College, Raipur.

22. Mishra, Varsha Sarjuprasad. **Hindi kahani kee anchalik dhara ke sandarbh mein Mithileshwar kee kahaniyon ka anusheelan.** Shivaji. Dr A G Waskar, Principal, A J Adyapak Mahavidyalaya, Gargoti, District Kolhapur.

23. Mishra, Vijay Kumar. **Goswami Tulsidas ka rachanatmak dayittva bodh.** BHU. Dr Srinivas Pandey, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

24. Naigaonkar, Pradnya Prakash. **Swatantrayottar Hindi aur Marathi natakon mein nari samasya : Ek tulnatmak adhyayan.** Shivaji.

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28. Rajasekhar, K. **Rajendra Yadav ka katha sahitya : Ek adhyayan.** Andhra.

29. Rajeshwari. **Kathakar Rajendra Awasthi ke sahitya mein yug chetana.** Garhwal. Dr Hari Mohan.

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31. Sagheer, Shiba. **Shani ka katha sahitya.** BHU. Dr Kumar Pankaj, Reader, Department of Hindi, Banaras Hindu University, Varanasi.

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Bengali

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I **Professor** (Pay Scale: Rs. 4500-7300) in the following subjects of Teaching Deptt:
 Computer Science-1

II. **Reader** (Pay Scale: Rs. 3700-5700) in the following subjects of Teaching Deptt: Computer Science-1, Physical Education-1, Bio-Technology-1 (Spl. in Genetic Engineering/Fermentation Technology/Bio-Chemical Engineering), Yoga-1, Journalism & Mass Communications-2 (One leave vacancy for about one year), Tourism Administration-1.

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- c) Reserved for Scheduled Tribe Category:
  Computer Science-1, Physics-1, Commerce-1, Physical Education-1, Music-1 (Spl. in Vocal Music).
- (ii) For International Centre for Distance Education & Open Learning: Open/General category:
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The eligibility of every candidate will be determined on the basis of qualifications acquired by him upto the last date fixed for the receipt of applications.

Candidates called for interview will have to come to the place of the interview at their own expenses and will bring with them their original research papers, degrees and certificates etc. for verification.

The University reserves the right to fill up or not to fill up the posts or to call only suitable candidates for interview. The number of posts likely to be filled may vary.

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2. Persons who have applied earlier for the posts of Professor in Computer Science, Readers in Computer Science, Yoga, Journalism & Mass Comm. and Tourism Admn., Lecturers in French and German against Advt. No.2/96, dated 24.9.96, Lecturers in Law, English, Physical Education & Painting for Scheduled Caste Category and Lecturers in Computer Science, Physics, Commerce, Physical Education, Music (Vocal) for Scheduled Tribe Category against Advt.No.1/97, dated 14.1.97 need not apply again. However, they may send additional information if any.

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2.	CONTROLLER OF EXAMINATIONS	01	Not exceeding 50 Years.	Rs. 3000-4500

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सम्पूर्णानन्द संस्कृत विश्वविद्यालय, वाराणसी

विज्ञापन सं. 1/97

अधोलिखित पदों पर नियुक्ति हेतु निर्धारित प्रपत्र पर आवेदन पत्र आमंत्रित किये जाते हैं, जो विश्वविद्यालय कोष में रु. 30/- नकद जमा करने पर अथवा डाक द्वारा वित्त अधिकारी, सम्पूर्णानन्द संस्कृत विश्वविद्यालय, वाराणसी के नाम देय रु. 40.00 का बैंक ड्राफ्ट/पोस्टल आर्डर भेज कर दि. 1-3-97 से प्राप्त किये जा सकते हैं । ये आवेदन पत्र अंकपत्रों एवं प्रमाणपत्रों की प्रमाणित प्रतिलिपियों सहित रजिस्टर्ड डाक से इस प्रकार भेजे जायें कि दि. 10-4-97 तक विश्वविद्यालय में अवश्य प्राप्त हो जाए । सेवारत अभ्यर्थी अपना आवेदन पत्र अपने नियोजक के माध्यम से ही प्रेषित करें। अस्थायी पदों को छोडकर शेष पदों पर नियुक्तियाँ एक वर्ष के परीक्षण पर होंगी । जिन्हें एक वर्ष से अनधिक काल के लिये बढाया जा सकेगा। अधिवर्षिता की आयु साठ वर्ष होगी ।

1. **आचार्य (तीन पद — सामान्य):** शिक्षाशास्त्र, साहित्य और वेदान्त — प्रत्येक में एक पद स्थायी ।

2. (क) **उपाचार्य (तीन पद — सामान्य):** साहित्य, प्राकृत एव जैनागम और प्राचीन व्याकरण — प्रत्येक में एक पद स्थायी ।

2. (ख) **उपाचार्य (एक पद — सामान्य):** भाषा विज्ञान (स्ट्रक्चरल लिंग्विस्टिक्स) — एक पद अस्थायी परन्तु चलते रहने की संभावना ।

3. (क) **प्राध्यापक (18 पद — सामान्य):** सामवेद, शुक्ल यजुर्वेद, ज्योतिष, साहित्य, पुराणेतिहास, मध्य वेदान्त, रामानन्द वेदान्त, पूर्व मीमांसा, सांख्ययोग, बौद्ध दर्शन, पालि, भाषा विज्ञान, भाषा विज्ञान (ग्रीक — लेटिन), हिन्दी, तिब्बती भाषा, अर्थशास्त्र, शिक्षाशास्त्र (मनोविज्ञान) तथा ग्रंथालय विज्ञान — प्रत्येक में एक पद स्थायी ।

3. (ख) **प्राध्यापक (दो पद — सामान्य):** पुराणेतिहास तथा राजशास्त्र — प्रत्येक में एक पद अस्थायी परन्तु चलते रहने की संभावना।

3. (ग) **प्राध्यापक (तीन पद — अनुसूचित जाति के लिए आरक्षित):** नव्य व्याकरण, गणित (ज्योतिष), शिक्षाशास्त्र — प्रत्येक में एक पद स्थायी ।

3. (घ) **प्राध्यापक (एक पद — अन्य पिछड़ा वर्ग के लिये आरक्षित):** शिक्षाशास्त्र — एक पद अस्थायी।

4. **शिक्षक (२ पद — सामान्य):** संगीत (गायन) तथा संगीत (तबला) — प्रत्येक में एक पद स्थायी ।

वेतनमान:- आचार्य पद : 4500-7300 । उपाचार्य : 3700 - 5700, प्राध्यापक : 2200 - 4000 तथा शिक्षक : 1400-2300।

न्यूनतम अर्हतायें :- (1) क्रम सं. 1 से 3 (घ) तक के पदों के लिये विश्वविद्यालय अधिनियम एवं परिनियम में वर्णित अर्हतायें अनिवार्य हैं । (2) शिक्षक पदों के लिये सम्बद्ध विषय में कम से कम उच्च द्वितीय श्रेणी में स्नातकोत्तर उपाधि अथवा तत्वसमकक्ष योग्यता । **वांछनीय:** अन्य वाद्य वादन क्षमता ।

सामान्य निर्देश: (1) पूर्व विज्ञापन स. 1/1965 के अनुशरण में उक्त पदों के लिये प्राप्त आवेदनपत्रों पर विचार करना संभव न होगा, अत: ऐसे अभ्यर्थी पुन: आवेदन करें। (२) साक्षात्कार हेतु आहूत करने का अधिकार विश्वविद्यालय के पास सुरक्षित होगा ।

विद्याधर त्रिपाठी
कुलसचिव

पत्रांक: जन. 305 स. 2944/97 दि. 20.2.97

CARMEL COLLEGE OF ARTS, SCIENCE AND COMMERCE FOR WOMEN

NUVEM, SALCETE, GOA-403 604.

Applications with full bio data are invited for the following posts so as to reach the undersigned within 15 days

---

AGRICULTURAL SCIENTISTS RECRUITMENT BOARD

KRISHI ANUSANDHAN BHAVAN: PUSA: NEW DELHI.

Corrigendum

Reference advt. No davp 1020/13/96 appeared in this Journal on December 23, 1996 regarding recruitment of vacant posts in Essential Qualifications No (1) relating to the post at Sl No. 22 the following may be read as

"and other allied disciplines."

Other contents of the advertisement remain unchanged. The last date for receipt of applications in A.S.R.B. in respect of the post of Project Coordinator (Fruits), Central Institute of Sub-Tropical Horticulture, Lucknow has been extended upto 29.3.97. Those who have already applied need not apply again.

davp 1020/0018/96

Under Secretary (R)

Department of Business Administration

(Faculty of Management, Magadh University, Bodh Gaya)

GAYA COLLEGE, GAYA

Admission to Two Year Full Time (1997-1999) MBA Programme
Approved by AICTE (Govt. of India) and UGC

Eligibility **- A Bachelor's Degree (10 + 2 + 3) in any discipline from a recognised university with a minimum of 60 percent marks in the aggregate. Candidates appearing at final /degree exam. may also apply.**

Selection **- Selection for admission through written test to be held on 11th May 97 from 9 A. M. and viva on 12th & 13th May, 97 to be conducted at Gaya College, Gaya.**

Procedure **- Application form and prospectus can be obtained from college counter against cash payment of Rs. 220 or by sending a crossed Bank Draft of Rs. 200 for each form drawn in favour of Principal, Gaya College and payable at Gaya. Duly filled in form alongwith a crossed Bank Draft of Rs. 200 as examination fees drawn in favour of Principal Gaya College must reach the Principal, Gaya College, Gaya 823 001, latest by 21.4.97.**

Dr. N. C. Banerjee
Director

Dr. K. D. N. Singh
Principal and Dean

from the date of publication of this advertisement, for the year 1997-98

Applications must be accompanied by certified copies of marksheets of all the examinations from SSC onwards. Those already employed shall forward their applications through proper channel and shall account for breaks if any in their academic career.

Category of Posts: Open/Clear Vacancy

1. Lecturer in Psychology (Special area of specialization: Experimental and Physiology, Psychology). : 1 New post. Full-time
2. Lecturer in Mathematics **Leave Vacancy for 1997-98** : 1 post Part-time
3. Lecturer in Physics : 1 post : Full-time
4. Lecturer in Commerce **(with specialisation in Accountancy)** 1 Post Full-time
5. Lecturer in Botany (90 days) : 1 Post : Full-time

Essential Qualifications:

A Master's degree of a recognised University in the relevant subject with eight/six papers and at least 55% marks or its equivalent grade and good academic record.

Candidates applying for Lecturer's post must have passed the Eligibility Test for lecturership conducted by the U.G.C., CSIR or similar test accredited by the UGC. However, if such candidates are not available or found suitable, general category candidates will be appointed on temporary basis and the appointment will not be confirmed till the candidate passes the NET/SET

Scale of pay : Rs 2200-75-2800-100-4000 plus admissible allowances as per rules. **Part-time: half of above.**

Terms and Conditions of service are those laid down by the Goa University/ Directorate of Education, Government of Goa and other competent authorities.

Sr. Margaret Angela A.C.
PRINCIPAL

Anna University

CHENNAI - 600 025

B.Tech (Industrial Biotechnology) Entrance Test 1997

Advertisement No.01/CBT/97

Applications are invited for the All India Entrance Test to be conducted for admission during 1997-98 to the B.Tech (Industrial Biotechnology) Degree Programme offered at the Centre for Biotechnology of Anna University.

The Entrance Test will be conducted by the JNU, New Delhi at Bangalore, Bombay, Calcutta, Coimbatore, Chennai, Hyderabad, Madurai and New Delhi.

ELIGIBILITY

Candidates who have completed or are appearing for H.S.C. Examination under 10+2 stream or its equivalent with Physics, Chemistry and Mathematics or Biology are eligible to appear for the Entrance Test.

Candidates should not have completed 21 years as on 1st July 1997. The age limit is relaxed by 3 years in the case of SC/ST candidates and by 5 years in *the case of physically handicapped candidates.*

Application forms can be had from 10th February 1997 in Person from the State Bank of India, Anna University on payment of Rs. 250/- (+Rs.5/- bank service charge) during the working hours of the Bank, (10.00 a.m. to 2.00 p.m. on week days and 10 00 a.m. to 12.00 noon on Saturdays) **or** from the Centre for Biotechnology on production of a Demand Draft **or** Application forms can be had *by post by sending a requisition on a cover addressed to the Director, Centre for* Biotechnology, Anna University, Chennai - 600 025, along with a Demand Draft and a self addressed envelope of size 30 x 12.5 cms stamped for Rs. 7/- (Rupees seven only).

The Demand Draft should be drawn in favour of **The Director, Centre for Biotechnology, Anna University, Chennai - 600 025** payable at the Service *Branch, Chennai obtained from any Nationalised Bank on or after 1.2.97. Candi*dates are advised to write their name and address on the reverse of the Demand Draft.

Eight seats are set apart for candidates to be sponsored by large industrial houses interested in the development of Biotechnology. Sponsored candidates should also appear for the Entrance Test Details regarding sponsorship can be *obtained from the Director, Centre for Biotechnology, Anna University, Chennai -* 600 025 on written requisition accompanied by a stamped self addressed envelope by the Industry and not by the individual.

Last date for receipt of completed applications : **7/4/97**

Date of Entrance Test : **20.4.97** (10.00 a.m to 1 00 p.m.)

A limited number of unused question papers of last years's Entrance Test are available. It can be obtained from the Director, Centre for Biotechnology on payment of Rs. 20/- in the form of Demand Draft drawn in favour of the Director, Centre for Biotechnology.

This Entrance Test is only for admission to the B.Tech (Industrial Biotechnology) Degree Programme. Candidates desiring to seek admission to other *programmes in Engineering/Technology offered in Tamil Nadu have to appear for* the Tamil Nadu Professional Courses Entrance Examinations (TNPCEE 97).

Apart from applying for the Entrance Test the candidates have to apply for admission to this programme separately. The advertisement for admission to this programme will be issued later.

DEAN (E & A)

S.S.L. Jain P.G. College, Vidisha (M.P.)

Affiliated to Barkatullah Vishwavidyalaya, Bhopal (M.P.)

Advertisement No : 2/96

WANTED

Applications are invited for the following vacant posts of Asst. Professors in our College in the scale of (2200-4000) with D.A. as per rules.

S.No.	Subject	No. of posts	Category
01	Physics	One	Schedule Tribe
02	Botany	One	Schedule Castes
03	Mathematics	One	O.B.C.
04	Economics	One	Gen.

All the above mentioned posts are regular. Qualification as per M.P. Govt. rules. Application forms can be had from the college office on payment of Rs. 50/- by D.D/I.P.O. in favour of Principal, S.S.L. Jain College, Vidisha. Last date for receiving complete application form in the office is **31st March 1997**.

Note :- Those who applied earlier are not needed to apply.

Dr. S.C. Jain
PRINCIPAL

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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 11 MARCH 17, 1997 Rs 9.00

B.K. Passi

The Noble — The Teacher Alone?

Virender Kumar

Management Education for Women — A Critical Appraisal With New Possibilities

Rameshwari Pandya

What Do Home Science Students of Baroda Think About Legal Education?

Ranganatha Mishra

The Storehouse of Human Learning — Convocation Address

INTERNATIONAL HINDI VARSITY

INSTITUTION-INDUSTRY INTERACTION

SWARNAJAYANTHI FELLOWSHIPS SCHEME

RESTRUCTURING TEACHER EDUCATION CURRICULUM

Association of Indian Universities

DOEACC SOCIETY

(A SOCIETY UNDER DEPARTMENT OF ELECTRONICS, GOVERNMENT OF INDIA)

DOEACC COMPUTER EXAMINATION - JULY 1997

The DOEACC 'O'/'A'/'B'/'C' Level Examinations, July, 1997 will be conducted by the DOEACC Society, as per shedule below

'O' Level - 12 & 13 July 1997
'A' Level - 12 to 16 July 1997
'B' Level - 12 to 24 July, 1997
'C' Level - 12 to 19 July, 1997

Examination Application forms 'O'/'A'/'B'/'C':

(i) Sale of Examintion Application Forms starts from 1 March 1997

(ii) Last date of request for Examination Application Forms from

- Counselling Centres (details given below) 15 April 97
- The Office of DOEACC Society through Post/Courier 15 April 97
- Counter at the office of DOEACC Society at New Delhi 30 April 97

(iii) Last date of receipt of filled in Examination Application Forms by the office of DOEACC Society at New Delhi 30 April 97

A - Important Instructions :

1 DOEACC Society will NOT be responsible for any postal delay/loss Candidates have to ensure that completed application forms should reach DOEACC Society at their address at New Delhi latest by 30 April 1997

2 Application forms for Examination at any Level (O/A/B/C) can be obtained on request in writing by candidates registered for the concerned level with the DOEACC Control Centre or DOEACC Society at New Delhi by sending a fee of Rs 20/- (Rupees twenty only) per application form per level by demand draft in favour of "**DOEACC**" Payable at **New Delhi.** The request SHOULD CLEARLY SPECIFY THE LEVEL and be addressed to the DOEACC SOCIETY at their address at Electronics Niketan, 6-CGO COMPLEX NEW DELHI-110003 Candidates, Institutes Organisations can also collect the forms IN PERSON ONLY against DD for the appropriate amount favouring "**DOEACC**" payable at NEW DELHI (Repeat **favouring "DOEACC" & payable AT NEW DELHI ONLY)** from the following Centres

STATION-ORGANISATION (LOCATION)	PHONE NO (CONTACT PERSON)
Aurangabad-CEDT (M U Campus)	23748 20585 (Sh YA Khan)
Bangalore ETDC (Peenya Indl Estate)	8394647 8394252 (Sh RN Guru)
Baroda Elect Engg Dept (MS Varsity)	434188 (Prof SG Shah)
Bhubaneshwar STPI (CRP Square)	407269 270 (Sh Manas Patnaik)
Calicut-CEDT (REC)	7266 67 68 (Mrs VS Sheela)
Calcutta-JU (Project Impact)	4731138 (Ms Sauli Roy)
Chandigarh (8 Sector)	548206-544751 (Brig SS Sahney)
Chandigarh (CEDT-Mohali)	571260-571259 (Sh Iqbal S Josan)
Guwahati-ETDC, (Rajgarh Rd)	541504 540539(Sh S Mali)
Goa-ETDC,(Mapusa Indl Estate)	262017 (Sh RM Khare)
Gorakhpur - (CEDT)	338872 73 (Sh AKD Dwivedi)
Hardwar KV No 2 (BHEL Township)	426801 (Shri PS Sharma)
Hyderabad-CMET (Kushaiguda)	6621658 622437 (Sh V Talhavadkar)
Imphal-CEDT, (A Kampel)	224109 (Sh Manglem Singh)
Indore-DAVV (Khandwa Road)	470027 (Prof Raj Kamal)
Jaipur-ETDC (Malviya Indl Area)	520506 520796 (Sh BS Sisodia)
Jammu CEDT, (Gandhi Nagar)	533845 (Sh AK Joshi)
Lucknow-UP Police (Ashok Marg)	280615 (Sh RAS Tyagi)
Madras Centre for Reliability, (VSI Estate)	4926418 5691 (Sh P K Rao)
Mumbai-Sameer (IIT Campus)	5783227 (Mrs JV Chande)
Pune (216 Shivaji Nagar)	324511 (Prof SS Chaubal)
Ranchi RDCIS SAIL	407451 (Sh RN Chatterjee)
Trivandrum-ERTL (Keltron House)	326928 (Mrs S Beena)
Thrissur CMET (Kolazy Complex)	7757 7347 (Sh KR Dayas)
Vijaywada-PRSCAC (Moglarajpuram)	475966 (Prof SVS Sastry)
Visakhapatnam AU College of Engg	554871 314 (Dr KVSVN Raju)

3 Candidates who have appeared at the Jan 97 exam may also obtain the application forms for Jan 97 examination as aforesaid without waiting for the results of Jan 97 exam In case any such candidates is successful in any of the Modules/Papers of O/A/B/C level exams of Jan 97 for which he has applied for Jul'97 Exams the examination fee remitted by the candidate *for the particular Module/Paper will be refunded*

B. Important Announcement Regarding Revised Syllabi or '*O*', 'A' and first two semesters of '*B*' level.

1 Keeping in view the rapid developments in the field of Information Technology the syllabi of DOEACC Computer Courses in respect of O level A Level and first two Semseters of B Level have been revised However examinations as per both the revised and the old syllabi will be conducted by the DOEACC Society for the forthcoming July 1997 and January 1998 and *thereafter the old syllabus* would be discontinued and candidates would only have the option to appear as per the revised syllabus

2 Candidates should please note the following

(a) Those who wish to opt for the old syllabus (appearing for first time or completed some of the module(s)/paper(s) O/A First two semesters of B level) should note that they can appear *for the module(s)/paper(s)* (as per old syllabus) in July 1997 and January 1998 only and thereafter examinations would be conducted only as per the revised syllabus (old would be discontinued w e f July 1998)

(b) Candidates who have already cleared some of the module(s)/paper(s) of O/A *First two semesters* of B level as per the old syllabus can migrate to the revised syllabi even before July 1998 Such candidates would be exempted from certain module(s)/paper(s) of the revised syllabi on a case to case basis based on the module(s)/paper(s) previously cleared by *him/her* as per the old syllabus

(c) Syllabus revision with respect to the remaining 15 papers of B level and C level is under finalisation

3 Detailed instructions have been sent to all accredited institutes (over 600) in the country

4 The revised syllabi can be obtained by post from the DOEACC Society against payment by Demand Draft favouring "DOEACC" payable at New Delhi for Rs 125/- per copy of syllabus

5 For further details, please contact any of the accredited institutes or write to DOEACC Society at the address given below

DOEACC SOCIETY

(A Society under Department of Electronics, Government of India)
Electronics Niketan, 6, CGO Complex, New Delhi-110003,
Phone: 4363330-31-32, FAX 4363335

INSIST ON THE "DOEACC" COMPUTER COURSE

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Editor :
SUTINDER SINGH

The Noble – The Teacher Alone?

B.K. Passi*

Introduction

For a long time, the city of Indore was my work place. It is a lovely city. Rains in Indore are beautiful, but a few years back, the August rains were playing havoc in the city. The new academic session had begun. The teachers day was fast approaching. As usual, I was feeling uncomfortable with the onslaught of the traditional approaches of celebrating the Teachers' day. I was agitated about this innocent game. This game about the social recognition of teachers become a cruel joke when played in a ceremonial fashion. I have a doubt, whether this game really helps in improving, any of the five dimensions associated with the main concept of 'status of teachers'. These are: (a) self-esteem vis-a-vis self concept of teachers, (b) social status vis-a-vis general social recognition (c) economic status vis-a-vis comparative emoluments, (d) professional status vis-a-vis inter-professional status, and (e) spiritual status vis-a-vis professional nobility. Maybe, these ceremonial celebrations of teacher's day might have marginally helped in improving the social status of teachers! I am not sure.

Many such uneasy issues about the importance and nobility of teaching profession started reeling out of my mind. Today I want to share those issues, questions and the associated feeling which have been bothering me for quite sometime now. To explore the issue of nobility of teaching profession, we had organised a brainstorming session within our institute. We chose to explore the question of the extrinsic and intrinsic nobility inherent in the teaching profession. The group started finding and constructing the meaning of important terms like, profession, and nobility. We were conducting the brainstorming-cum-discussion in a 'dialogue' format. Comparative and illustrative contexts of other professions had dominated our discussions and dialogue.

Profession

What do we mean by a *profession?* Profession is a specialized area of activity acquired through a systematic program of education and training. The concept of a profession is characterized by: (a) engaging in a useful, and specialized work having some noble cause, (b) undergoing through, rigorous and specialized preparations, (c) accepting to follow the code of conduct and ethics, and (d) practising the duties with freedom, responsibility, and accountability. There are other viewpoints regarding the set of essential attributes for the concept of 'profession'. To illustrate, we furnish herewith another set of essential criteria for defining a profession. This set of criteria is: life long career commitment, social service, intellectual techniques, code of ethics, and independent judgement related to professional performance.

While considering the status of teaching profession, WCOPT study identified five such determinants: (a) the academic and professional

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**Vice-Chairperson, National Council for Teacher Education, 16, I.P. Estate, New Delhi-110 002.*

requirements for entry into the profession, (b) the financial and other economic benefits, (c) the professional responsibilities assumed, (d) the freedom of teachers to take part in public affairs, and (e) the degree of public recognition.

Sociologist Kingsley Davies has put forth *two basic criteria* for judging the comparative status-position of profession. Professional status can be graded on the basis of : (a) duration and rigor of training required to acquire the necessary expertise, and (b) utility of the profession for the survival and development of the society.

Suddenly, the focus of this on-going discussion got diffused when one of our group members, posed some analogous questions. The brainstorming session stepped out-of-tune. We helplessly got drifted away. While responding to these new questions, we found ourselves comparing inherent roles, importance, usefulness, and nobility of other professions with that of teaching.

Nobility of Professions

What is the *common sense meaning* of nobility? A general purpose dictionary gives many meanings with varying shades and emphasis. On of the classical meanings of nobility is related to the noble-class of aristocracy. Further, the dictionary says that a noble person is one who possesses excellence of character and lofty ideals; is free from pettiness and meanness; shows magnanimous and incorruptible behaviours; cannot be corroded and tarnished by the external surroundings and other forces; and who works for others. Nobility of a small independent act or that of an organized strategy assumes to have the components of pious means, and pious goals.

We wanted to avoid the nebulous description of nobility as it was not helping us to establish links with the professions. We were in need of knowing a noble profession. We had to go beyond the concept of a noble person. Could nobility become a defining viewpoint for conceptualizing the profession? Let us look into the process; how do new professions or areas of study originate and evolve. Somewhere else, we had accepted that a profession/discipline/area-of-study emerges out of the pre-decided uniqueness of chosen viewpoint, specifity of its purpose, and its definite methodology. Over a long period of struggle, this unique viewpoint gains a special status, and establishes itself as a distant area-of-work. If this be so, we started exploring whether 'nobility' could become a *new and legitimate viewpoint* for establishing the entity of the professions including teaching.

We took this challenge and started suggesting to ourselves : let us conceptualize anew the concept of *'nobility'*. One such approach is given here. Later on, it would be used as a criteria for defining and classifying the professions. This approach employs life-matter as a basis of classification. We may use this chosen term called here as 'life-matter'. Five levels of this life-matter are : (a) an inanimate matter handled by natural sciences, (b) a plant matter handled by botanical and biological sciences, (c) an animal and man-body matter handled by veterinary and medical sciences, (d) a matter of human beings handled by humanities and social sciences, and (e) a supra-matter entity handled by educational sciences and behavioural sciences.

Using the idea of 'life matter perspectives', two composite concepts 'integrated-cosmic perspective', and simultaneous-sensitivity' were constructed. First, if one develops a holistic understanding about the five aspects of life-matter, one is said to possess the 'integrated-cosmic perspective'. Second, the balanced and deep concerns for 'life-matter perspective' will create a person having 'simultaneous-sensitivity'. If a person uses both 'integrated-cosmic perspective' and 'simultaneous-sensitivity', then that person can be called a supra-man or spiritual being.

This defined concept of spirituality is one of the three essential attributes of professional nobility. Apart from this attribute of spirituality, which are the other two essential attributes required for defining professional nobility? We will talk about these attributes in the subsequent paragraphs, where we *will also link spirituality to professional nobility*. I wish to add that some friends suggested to avoid using the concept of spirituality, whereas others supported it much more strongly. Hence we retained that term even at the cost of its semantic difficulties.

A final stand about the definition, criteria, and legitimacy of labeling the professional nobility had to be taken. We accepted a three dimensional position stipulating that profession is noble only if it: (a) gives explicit statement of its assumptions through substantive positive assertions, (b) possesses spirituality having integrated cosmic perspective and simultaneous-concerns, and (c) satisfies a non-mystical flavour covering rational-cum-intuitive approach. Let us highlight, three criterial attributes of nobility of a profession are : *positive assumptions, integrated-cosmic perspective cum simultaneous-concerns. and a non-mystical rational-intuitive approach.*

Let us side step for a minute and ask a different question : How does a person reach this 'integrated cosmic perspective cum simultaneous concerns'? It is quite a tough question. It looks like that the process of arriving at a coordinated and integrated view needs to use other processes like, 'Justice, Concern, and Truthfulness'. The idea of *Justice* stands for equality for all; *Concern* means following special help to the needy one; and *Truthfulness* means complete agreement with your convictions. These three processes may be conflicting while the processes of integration and coordination are going on in the mind. Right at this moment, due to the nature of this note we stop pondering about integration. We come back to our business of constructing the definition. The following figural presentation (Fig. 1) could be helpful for describing the structure and the components of professional nobility.

While applying these criteria to the professions in the actual field conditions, one faces many difficulties. We got trapped into the web of ambiguity. We, therefore, *avoided the idea of graded levels of professional nobility.* Nominal scale for professional nobility was accepted by us. This created another set of problems, called, simplistic solutions to complex problems. We, therefore, found ourselves caught in another trap of over-simplification. It was difficult to come out of the puzzling situation. Ultimately, we ourselves developed a few operational guidelines for deciding the nobility of professions.

Selected Professions

Along with teaching, we chose a few professions and areas-of-study for examining their nobility. In these deliberations, we had compared the 'ideal-form' of teaching profession and also the 'ideal-form' of other professions. Obviously, we avoided the existing deficiencies in the practices and the present status of field conditions of these professions. The terms like profession, professional person, and related professional institutions have been used inter-changeably. A comparative analysis based upon (a) nature of assumptions, (b) aims of the profession, (c) methods and means, and (d) scope and limitations, revealed that teaching profession alone holds nobility when compared with other selected professions. Table 1 provides an overview of professional nobility of teaching vis-a-vis a few chosen professions/areas-of-study.

Teaching

What is the status of nobility of an activity called *teaching* vis-a-vis the above referred attributes? Is the status of this activity called *teaching*, equivalent to that of a *'craft' or profession*? Normally, the 'craft and profession' are placed on the two opposite ends of a continuum. These days, the two concepts and their illustrative field practices are co-existing on the ground. One of the approaches is holding the popular view that teaching is best learnt under the direct guidance of a *master* through an 'apprenticeship model'. This approach implies that teaching is a craft and not a profession. These view-holders have claimed that an intelligent learner can pick up all the tricks of the trade on the job. To me, it looks that this popular view reduces the status of teaching to that of a craft. Many other thinkers have claimed that teaching in its ideal form is a profession. Some of these claimants have even preferred to label 'teaching' profession as a *meta-profession*. Hazlett is

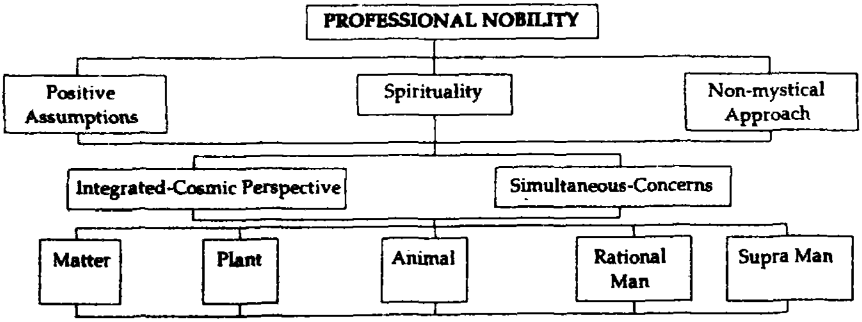

Fig 1 : Defining Professional Nobility

quoted as saying in *Handbook of Research on Teacher Education* that teaching is a complex psychological and social enterprise, that it is a problematic and contingent activity, that its operations involve judgements based on systematic knowledge, that it could foster inquiry and the discovery of new knowledge — that it might, in one word be called a profession.

Education aims at 'all round development' of personality including the spiritual aspect of 'being'. Teaching is one of the most important professional processes of education. Teaching profession is founded on its unique and positive *assumptions*. Unlike many other popular professions, teaching is based on the assumptions of maintaining positive and substantive assertions. Teaching is not only positive in its assumptions, and goals, but also in its methods.

The scope of teaching is comprehensive and all pervading. Integrated and full development of body, mind, and spirit must also demonstrate *harmonious functioning in the society*. Teaching is developmental in outlook. Teaching employs developmental methodology.

Teaching is universal. It serves all persons, and is applicable both to the developing and the developed persons alike. There are no restrictive ceilings. It has *no boundaries* created by stages, sectors, structures, and group-specificity. It goes beyond the formal meaning of the term of labeled teachers and structured teaching. Education, teaching, and learning are life-long, life-wide, and life-like processes. Teaching is life-giving, and also life-defining process. One may like to describe teaching with the help of a newly coined approach termed as *autopoiesis* in the area of neuro-biology.

Legal

Apart from many others, the important aim of

Table I : Selected Professions and their Nobility

Profession/ Area-of-Study	*Assumptions/ Criteria*	*Aims/Nobility*		*Means*	*Scope*
		General Aims	*Cosmic/Spiritual*		
Teaching	*Positive assumptions of potentiality management*	*All round development of body, mind, and spirit having social harmony*	*Fully Realizable*	*Development*	*All individuals are served, integrated-cosmic perspective, rational-cum-intuitive approach, positive assumptions*
Legal	Conflict resolution or oppression management through argument and reasoning	Free and just society and system	Marginal	Agreed legal frame and logic	Partly
Medical	Disease management and handling body deficiency, cure, prevention, development of body-brain-mind	Disease free healthy body including mind and environment	Marginal	Discovered principles and invent mechanisms of health	Partly
Defense Service	Conflict or aggressor or defense management through different means including human killings	Security, and a peaceful society	Nil	Agreed defense norms, equipment, and strategies; Men are tools	Partly
Business	Materials, goods, and services-management	Convenient and just distribution of wealth and use of resources	Nil	Theories and practices of business management	Partly
Engineering	*Production of goods and services*	*Creating comforts*	Nil	Discovered principles and invented mechanisms of production	Partly and Indirectly

the legal profession is to create a society based on agreed principles, such as, justice, freedom, equality, and fraternity. Legal profession provides principles and mechanism of regulating justice. As expected, legal profession has no primary responsibility for body development of the individual. There is no primary responsibility for material development of the society. Same way, this profession has no responsibility of spiritual development of the individual. Of course, it has a very important responsibility of developing a just society and a responsible citizen. There are various ways to achieve such goals. As and when a person works like a teacher of law, he becomes a specialized teacher. He/She is using educational principles and mechanisms for achieving his overall objective of a just society. I am also taking a position that persons like Buddha, Gandhi and Kabir were primary teachers while they were educating the masses.

Let us see how does a person pursuing law perform his usual role and functions? A lawyer gives legal advice and pleads alike for all types of clients: both good and bad clients; true and untrue clients, innocent or otherwise? If at any stage, someone fails to accept a particular case of a client, on some grounds, there is someone else who undertakes the declined pleading? In other words, the given professionals do not differentiate between the quality of clients. This happens even when, this professional knows about the fault of a given client. Half the times, he supports the liars and at other half times, he opposes the true ones. The arguments of quality for justice, the urge to search the truth, and possible errors of classification are put forward so as to accept all the cases of all the clients. These are inherent difficulties of the legal profession. Further, we notice that the 'law can punish and hang the culprits' but may not be able to reward the law-abiding clients. The given entire structure is primarily based upon the psychology of punishment and psycho-fear.

Can we infer that the assumptions, and methodology of legal profession are not subscribing to the humanistics and spiritual orientations? At the most, the legal profession promises to create a pre-defined order, peace stability and justice. If at any stage, the legal profession undertakes any goodwill exercise of conflict-resolution, it immediately takes the shape of teaching; and then falls outside the frame of legal profession. As said earlier, the person is acting more like a teacher and less of a lawyer. Compared to teaching, legal profession has a limited perspective of social order and justice. It cannot reach the level of integrated-cosmic perspective. Hence, the profession cannot be noble, although very essential for individual and the social order. Legal profession is very useful, important, and even powerful in many ways. We have to think about its nobility as defined above.

Medical

One of the members of our group had posed a few analogous questions: what is the basic role of medical profession? Does medical profession operate through health centres or hospitals or both? Why do hospitals exist in a society? We struggled to find answers and then relate those answers with the idea of nobility. We found that we were getting non-substantive answers. In terms of health, we were finding answers like, what hospitals *'are not'* rather than what *'they are'*. We found that hospitals are supposed to manage diseases, handle deficiencies, compensate inadequacies, and so on. Apart from the 'cure' functions by hospitals, medical profession claims to take care of preventive functions, and developmental functions of the organic body-mind. Opposing views were also emerging during the brainstorming. One thing was certain that medical profession is based on negative assumptions of deficiencies. The profession is fear driven, deficiency management, lacks the cosmic-perspective, takes care of body, and deals with the sick sections of the society. Many more controversial and conflicting views were emerging in our discussion.

There were many difficulties to accept all of them. I list a few such views and difficulties for your perusal. There were issues of compulsions about reporting of diseases, compulsory disease diagnosis, compulsory course of treatment, persuasive/obligatory compliance of medical advice, human dignity and privacy, human freedom, cost of treatment, and so on. Some of these are trivial whereas others need careful examination from the point of view of nobility.

In addition to well known 'cure' function, are hospitals acting as 'preventive' institutions? Have hospitals been charged with these functions of 'curing and preventing' applied both to individuals and environment; and that these are performed with an integrated-cosmic sensitivity or in an educative manner or through a persuasive or compulsive style?

Are hospitals positive institutions when defined in terms of its substantive assumptions ? Are medical professionals and hospitals pursuing high and noble ideals? Will the profession be able to retain its status if the individuals refuse to live? In other words, medical profession can exist only if two conditions are pre-existing, namely, (a) desire to live and (b) continuity of diseases in human bodies. Are they doing the triple functions: cure-work, and/or preventive-work, and/or development-work with a cosmic-perspective?

Is it true that the need for hospitals is directly proportional to the phenomenon of prevailing diseases, and reciprocally related to the health of a nation? Will the profession essentially continue to retain its acquired importance? What happens if a nation suddenly becomes/keeps healthy; do we then require doctors and continue supporting our hospitals? Such questions were raised. Suitable answers were not worked out.

It appears that this profession lacks adequate positive assumptions, survives on fear, deals with body having limited aspect of life-matter, does not possess cosmic perspective, deals with the sick persons only, has ceiling of development action.

Defense Services

The aim of defense services is to create and ensure and peaceful environment within a specified area/territory. Is it not true that defense institutions are founded on the prepositions of implicit fear? How do our defense institutions protect our interests in a given territory? In order to provide an environment of security, defense institutions employ many means including the extreme step of human killings. Many a time, such killings are impinged upon people who do not even know each other. These persons are generally innocent and unknown to each other. These killings are not due to personal reasons but because of their commitment to the nation and the responsibility assigned to them as a part of nation's defense. Despite all this fundamental question about human killings remains to be answered. Is it the only approach to solve conflicts? Indeed it results in a compromising guilt in the mind of the killer who plays this instrumental role in the war. Continuous research in social sciences should enable us to find solutions to solve problems of social conflict. Human killings, whatever the reason and whatever the circumstances and whatever the form, are nothing but human killings. Use of any of the legal, accepted, and socially approved instruments cannot transform these killings as anything else except human killings when looked from the humanistic angle. It is not a humanistic action in any form. But peace is very essential for existence. What do we do? Education seems to be the only solution to achieve this goal. If old educational methods do not work, alternative methods should be researched upon. If wars are cared in the minds of men, why can't peace be created in the minds of men. Coming back to nobility, we reiterate saying that defense services are important, useful, and even glamorous profession but not a noble one. The overall actions and intentions of this profession inhibit granting the label of nobility.

Business

Business studies aim at providing efficient commercial services, and delivery of quality goods required for a comfortable living. By doing so, it claims to create opportunities for a 'just' distribution of wealth. It further claims that business profession enhances the quality of life. Sometimes business management by itself, does claim to create a good social environment of equity and excellence, and also humanistic citizens; our view is not so. We believe in a tautology saying that business management addresses itself to manage business. There is no one to defend and support business management except its own principles. It neither works with the integrated-cosmic perspective nor does it promise to deploy noble means. However, it claims to develop social-scientific perspective and may employ honest means. The recent tall claims of social face of business management need closer examinations. One can say that honesty can help business. However, the connotations of nobility and honesty are at variance. Let us conclude that like many other professions, business management is an important and useful profession, but it does not possess the essential attributes required for nobility of a profession.

Engineering

Engineering and technology aim at creating goods and services by handling lower levels of life-materials. This profession designs, creates, and produces material goods and services through varying levels of artificial environments. It serves a useful purpose of creating efficient and long term comfort environments by following the principles of science, human biology, and environmental parameters. The ecology-care, creating efficiency, and comfort-giving could become guiding principles for a comfortable and a rich society. This profession has richly contributed to the development of civilization and partly even to the culture. However, the profession does not directly handle the processes of higher levels of development of human being; and definitely not the spiritual being. I am again moving the statement that this profession of science-engineering and technology is useful, and important but is not essentially noble. This profession does not claim to be so.

We discussed and found that all these professions are very useful, and important; some of them are rich, powerful, and popular too. Are these chosen professions noble ones? Do these professions possess integrated-cosmic perspective? Are these professions founded on positive assumptions? Do they possess intrinsic worth; or have they acquired their worth? Are these professions labeled as noble? Are these professions forced to determine their nature and scope by the definitions and changing conceptualization? Will the survival and competition factors play their role in redefining professions?

Tentative Conclusions

Is nobility very essential to teaching profession and can other professions contribute their mite without being noble in the present sense of this note? Are the criteria of usefulness and importance not adequate for worthiness of a profession? General answer to these questions seems to be : 'definite yes'. Let us pose additional questions about the professions and their nobility. Do professions follow their own code of ethics or conduct? Are they following the law of the land and other approved social norms? Are they doing their professional work with all sincerity and to the best of their nobility? Do they earn respect from the society? Are these professions reasonably popular? Are these useful professions? Apart from all this, do they have a high self esteem level? Let me accept that most of the answers are affirmative.

Before concluding our presentation, we focused ourselves and asked whether professions like medicine, law, defense and engineering, are noble on the lines of that of the profession of teaching? We arrived at a *tentative conclusion* that teaching and education alone are noble, while other professions are not? A comparative analysis based upon (a) nature of assumptions, (b) aims of profession, (c) methods and means, and (d) scope and limitations revealed that teaching alone holds nobility when compared with other selected professions. We may note that we are not saying that teacher is noble rather we are saying that teaching task is noble whosoever may be performing it.

We would like to have another round of deliberations before we take a final position. Of course, some one taunted back and said that such discussions are not very useful, nor even noble. We need to ponder over this comment.

Author's note : 1. At *the of cost of possible irritation*, I dare repeat that I am interested in the arguments regarding the nobility *alone*. The *focus issue* is to examine the exclusiveness and *not* degree of nobility inherent in teaching profession I am not interested in arguments or evidence in favour of popularity, nor importance, nor usefulness, nor money-power, nor position-power, nor glamour, nor even mysticism in the professions.

I am not exploring the idea, whether teaching is *the noble profession*. Rather, I am examining *the idea of exclusive nobility* of teaching profession among other professions. I am seeking guidance and inviting clarification. I shall be grateful for such a help and interaction. Views expressed here are tentative. These are expressed in my personal capacity.

2. I am grateful to many persons in many ways. They are : Dr. D.D. Bandisthe, Dr. U.C. Vashishta, Dr. R.H. Dave, Dr. M. Reddy, Dr. R. Pal, Ms. Ishani, and Dr. O.S. Dewal, and many other old and new colleagues.

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Management Education for Women
A Critical Appraisal With New Possibilities

Virender Kumar*

There are four things a student should expect of any business school. One is to learn something about the business discipline like organisation, accounting, finance, production and marketing. The second is to deepen an intellectual understanding of the relation between activities in business and the major issues of human existence. The third is to be able to signal that you are the kind of person who goes to a certain kind of business school. And the fourth is to lay the basis for a set of personal equations. If your primary interest is in learning about the business disciplines, you don't need to spend money on a first class business school, because its comparative advantage lies in the other three areas. This is a fairly open secret. There are any number of places that do a pretty good job of teaching organisation, accounting, finance, production and marketing. They do not, however, do nearly as good a job of establishing that you are one of the very smart folks or of putting you in contact with other smart folks to build national or international network of personal contacts and they do not relate business life and talents to fundamental questions of human understanding.

Traditional approaches to management education aim at changing the personality of women only on short term basis. These approaches are based on faulty assumptions. We assume that we know and respond to the unique needs that women bring to our classrooms and programmes, and we press forward with pedagogical designs that simply meet the test of time rather than encourage women's intellectual and professional development. We assume parallel life and organisational experience for men and women, filling our courses with genetic strategies and solutions that alienate more than educate women. We assume we are preparing women for traditional organisational careers despite evidence that women define and manage careers differently than men. We assume male experience to be the norm, illustrating our androcentric theories with cases and examples that better reflect the lives of men than women and pay token attention to women's issues. We assume that our instructor roles, teaching practices and styles and classroom dynamics are gender neutral, ignoring the powerful role of gender in the management classroom. Let us examine some of these assumptions and see for ourselves the role management education is playing especially for women, and for their intellectual development.

Assumptions

1. Responding to the Learning Needs of Women

Women bring distinctive learning needs to the management classroom. What are these needs, how they inform their choice about teaching, strategies, course content, activities and evaluation practices. Such questions are hard for many management administrators to answer. We have been regularly asking faculty to share the ways in which their classrooms and their teaching reflect the unique learning needs of women. The request is almost always met with silence initially. Slowly, some faculty members begin to talk about adding readings or cases on traditionally so called women's issues such as balancing career and family or sexual harassment. Others profess good intentions but have no real strategies. Many reluctantly acknowledge that they have never considered the question and don't know where to begin.

Such attention to women's need in the management classroom is more universal than we like to admit. As educators we assume that what and how we have always thought it equally well for men and women. In reality few instructors have given serious consideration to how women's unique needs might reshape courses, programmes and disciplines. As educators working to prepare people for a diverse work-place we have largely ignored the educational diversity in our classroom.

Research tells us, for example, that women bring more self-doubt and more questions about their capabilities and intellectual competence to academic sittings than men do. Forced with failure of challenge, female students frequently blame and ques-

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tion themselves, while their male peers are more likely to attribute problems to external causes. Social factors reinforce women's fears. Media images tout physical attractiveness, not intellectual achievements as key to successful womanhood and societal forces still foster traditional feminine stereotypes that sound like prescriptions for anti-intellectualism. Lingering beliefs that women are rational and intuitive serve more as continued suggestions of women's deficiencies than as praise for special talents.

Acknowledging all this might, therefore, indicate the need for classroom activities that develop skills in accepting personal causality for the benefit of male students, paralleling opportunities to diagnose external causes of events for women's development. This would incorporate the recognition that highly combative exchanges and devil's advocacy, strategies used by powerful authority figures (such as Professors) can feed women's fears of being intellectually one down. It would multiply opportunities to demonstrate to women that they have the right stuff for intellectual discourse and accomplishment. It would also mean more emphasis on teaching strategies that model the ongoing struggles and tensions in learning for all and less emphasis on well-polished instructor performance and textbook answers. Activities that illustrate theory building as an ordinary human enterprise would be recommended and those that highlight only the extraordinary contributions of great masters in the field would be discouraged.

We need to ask ourselves honestly how often we approach the design and teaching of management with an awareness of women's self-doubts. We need to understand the power of these potential fears as well as other unique needs that women are trying to learn. For example women often come to academic seats with deep feelings of alienation. These feelings have been fostered by too many years of school experiences in which teacher's behaviour, attitudes and pedagogy favoured boys, too many lessons in which women have been asked to learn the experience of men and to accept these as representative of all human experience and too many texts, examples and cases that record the world of men's professional work, histories, sports and hobbies.

Women come to the management education needing to know that this educational experience will be different. They need their life's experiences and ways of knowing acknowledged, respected and validated in the classroom. Social forces may have channelled these women into pink-collar jobs or dead-end work. They may have chosen to place relationship and family before high powered careers and the chance to climp in organizational hierarchies. They may have forced blatant or subtle biases that have robbed them of their faith in the system or in themselves.

There are many reasons why women come into management education with thinner resumes than men do, or less hope for the kinds of existing jobs and organizational experience that instructors use to illustrate theories. Female students need to know, however, that all of their life experiences — whether any high-powered careers or in family connections — are important functions for ongoing learning. Too often, women have been asked to leave their life experiences outside the classroom door in order to study the "real world", a world that not only ignores the frequently different experiences of women, but that also offers women only limited and differential access.

When asked, women report that they need to help them learn. They need encouragement and confirmation. They want clear and honest feedback about their accomplishments in the classroom. They want teachers who help them identify and build on their progress — teachers who tell them, "That's good, now do more". They want faculty to take an interest in them and their specific needs. They want self-directed projected and self-generated criteria for evaluating their success. They want to learn in ways that encourage personal and professional development rather than ways that tap into family tuned social skills of performing to please (powerful) others.

Women want to learn in supportive communities when relationships are on equal standing with accomplishment. They want learning that matches their life experiences, and theories that value women. They want opportunities to stretch and grow in an environment that tells them it's all right to be what they are.

How well do we provide this kind of learning environment? How often do we assume that we do?

2. *Parallel Life, Managerial and Organizational Experiences*

There is no doubt that gender affects have been experienced by each one of us in our day-to-day life. From the moment of birth, boys and girls receive many subtle, and not so-subtle, social cases on what is and is not expected of them. In addition research reminds us that females define and experience the world differently, than males, communicate differently, define professional success differently and face different work place conditions. There are also differences in how men and women navigate mid-life, face social pressures and opportunities and approach leadership. And of course, women have the capacity for child birth and must deal with the unique pressures of a biological clock.

If men and women do not have parallel experiences, we need theories that reflect this. How well do gender differences inform our theories of organization and management? How often have we assumed that our genetic solutions and models based on years of androcentric research and male experiences in organizational settings are sufficient to explain the ways in which both sexes adapt to organizational life? How well do our practices prepare both men and women for successful and satisfying professional lives?

We have made progress in adding knowledge about women's experiences to the periphery of our disciplines, although these insights are often segregated into women's topics and courses. We have done less well in looking honestly and thoroughly at the core of our management and organizational theory base to distinguish that what applies best to men, to women and to both. How, for example, does gender affect our theories of strategy, business policy, motivation, assessment and so on, our beliefs about rationality that underpin our definitions of efficiency and effectiveness, and the core of what we define as essential to good management education?

While there have been debates over, for example, whether we need a separate theory of women's careers, there is no advocacy for a separate theory of women's organizational behaviour, nor any mention of the need for a theory of men's organizational behaviour. Yet if gender is powerful social influence that we know it to be, we need both such theories. There are always risks in acknowledging gender differences there are many examples of the use of differentiation to reinforce existing systems of inequality, providing justification for the continued exclusion of women from positions of power. But by making gender differences in our organizational and management theory bases, we run the even greater risk of falsely assuming that our generic teaching serves women well — and in so doing, of alienating another generation of female students, who wonder in silence and self-doubt why they don't fit the expected mould.

3. *Preparing Women for Traditional Organizational Careers*

Just as our management theories and disciplines assume parallel life and work experience for men and women, our approach to management education is based on the belief that we are preparing men and women for identical opportunities and career paths. However, the realities of a patriarchal society and the power of cultural experiences tell us that this is simply not true. While there has been some progress in breaking down the barriers to professions, occupations and positions, statistics still point to distinct gender-based job and career choices, lingering stereotypes colour available opportunities and choices for both sexes. The unchanging pattern of a heavily female corps of school teachers, contrasting with largely male administrative ranks, serves as a perfect reminder of how slowly things have changed.

But when we look beyond socialization and differential opportunities, theories of women's development raise critical questions about our assumed educational mission of preparing both men and women for traditional organizational careers. Research tells us that women understand and manage their careers differently than men do. For many women, this has meant creative definitions of careers, non-traditional work arrangements and entrepreneurial ventures (when economic conditions and social responsibilities allow the freedom to think beyond survival).

Gender differences lead to distinct set of choices, meanings and pressures for women, evident most clearly when we examine the difficulties and dilemmas women face in trying to balance career and family concerns. While career and work are the essential cornerstones of male identity, in women's identity formation they are coupled with strong needs for relationships and attachments. As Nobel laureate Toni Morrison elegantly illustrated when she refused to define herself as a writer but instead saw herself as "a mother who writes" or "an editor who writes", for women, there is a great distinction between identifying one's work and "being the person who does the work". Linear advancement and an unwavering focus on a fast cliff to the top, traditional definitions of a successful career path, provide too limiting a perspective for women's careers.

How well does management education prepare women for a career outside traditional organizational arenas, with a path and focus that differ significantly from traditional norms? How well do we offer skills and theories that assist rather than undermine women in their professional and career development? How often do we assume that we do?

4. *Male is the Norm, Female the Exception*

Working effectively with gender differences does not mean merely pointing to the ways in which women are different, while continuing to implicitly define men as the standard and women as the exception. For years, men have been the dominant theory makers, history writers, researchers and research subjects, providing us with a long, deeply rooted tradition of maleness as the norm in managerial and organizational life. We have inherited co-centric definitions of organizational "truth" as well as tendencies to label gender differences as women's deficiencies. In the same way some researchers have challenged maleness as the norm for healthy human development; we need to stand up and challenge maleness as the norm for a host of beliefs about good management, effective leadership, career success, work practices and organizational essentials.

We have equated, for example, male experiences, interests, and work patterns with effectiveness. We have made male work norms and standards synonymous with productivity. We have designed organizations based on the ways in which men think, feel and act, and we have justified those choices with old theories of human development and adult maturity, psychoanalytic notion that work alone is central to identity, and developmental beliefs that maturity and personal empowerment require competitive individualism and separation from others.

It is these theories that researchers claim have falsely established a male standard for adulthood. We need to explore the ways in which such normative assumptions colour our theories, disciplines and perspectives. In the process, we will raise the need and the potential for major transformation of our institutions, organizations and management training.

While we speak of creating organizations, that respond to the realities of a diverse work place, how much do we still implicitly sell the traditional male model of life and work as women's salvation from second class citizenship? As management educators, we have remained stubbornly resistant or largely oblivious to much gender needed change, frequently dismissing those who suggest it as radical or unrealistic. Instead, we still deal largely with assimilation issues, that is, how we can best absorb women fairly and equitably into existing organizations. We make only minor concessions and adjustments, ignoring demographic and economic predictors that show women to be a fast growing percentage of the work force.

All this puts management theory and education at significant crossroads. We have allowed women to enter the hallowed halls of organisations under the conflicting requirements that they become clones of their male counterparts while simultaneously conforming to cultural expectations of femininity. When women refuse to meet these requirements or demonstrate that they cannot do so, the result is the reinforcing of organizational preconceptions of what it really takes to succeed. This leads to the glass ceiling phenomenon in organizations, as well as to an environment of veiled hostility, lowered expectations, distrust, mixed signals. In career-theory vernacular, the failure of women to meet the conflicting requirements proves once again that women have less career motivation than their male counterparts. In organizational lingo, women are said to be unwilling to give their all to the company, to go the extra mile and so on.

Looking beyond our organizational experience and theory base, we also need to recognize the subtle ways in which we perpetuate the male norm in management teaching by using examples and cases that illustrate only men's lives and work experiences. When successful women are depicted, it is often as exceptions or as opportunities to explore so-called women's issues, thus reinforcing accomplishment and success as largely male domain. For example, such terms as manager, leader, or accountant are often preceded by the word female when women in business are discussed,while no modifier is used in the case of men. Such terminology may seem innocent enough. However, this kind of framing implicitly communicates powerful social messages about who is the assessed achiever and who is the exception.

5. *Teaching Practices and Classroom Dynamics are Gender Neutral*

Incomplete theories, case choices, language usage, and selective examples are ways in which gender messages are often inadvertently sent in the management classroom. Attending to such issues only begins to scratch the surface of what we need to do in order to understand how gender influences learning, student development, career choices and professional preparation.

The gender-neutral classroom is a myth. Gender plays an unacknowledged role in whether an instructor will serve as a role model for students who are of the same sex as the instructor or as a source of conflict or potential intimidation for those who are not. Instructors interact differently with male and female students, often unintentionally giving male students more attention, eye contacts feedback, and implicit encouragement. There is a mounting evidence of differences in how male and female students approach and react to instructors, prepare for the classroom, participate in group activities and discussions and respond to pedagogies and assignments. How aware are we of the ways in which our classroom teaching methods are steeped in gender dynamics? How confident are we in our abilities to manage these dynamics productively?

Case teaching and experiential learning are pedagogical mainstay in management education, both with implications for women's learning. Explorations of the educational merits of case teaching, for example, revolve largely around issues of selection of the appropriate case, instructor's skill in creating productive discussions and the developmental sophistication necessary for students to learn from cases. But a significant question often unasked by instructors, is that how equally men and women learn from the method. Research on women's ways to knowing offers an answer. Traditional case discussions, with their fast-paced intensity, implicit competition for student floor time, and propensity for combative exchanges favour men's ways of knowing. Women researchers tell us, they often find these public interchangers debilitating and doubt inducing.

Experimental activities on the other hand, offer female students opportunities to learn from being themselves in the classroom. Theory is developed from reflection on personal experience, with women's experiences viewed as a foundation for academic learning, not as an embarrassment. Comparing personal theories with those of experts encourages critical thinking, enhances self-confidence, and helps develop theory-building skills. This is personal validation that women often find lacking in more traditional, hierarchical teaching methods.

Similar explorations of the corrections between gender and learning are possible for other common teaching methods, such as small group discussions, lectures, student presentations, field work assignments and so on. There is also much work to be done in expanding present options for how best to teach.

Conclusions

As management educators, we must take a deep and critical look at the assumptions that underpin our present beliefs about the essential structures, methods, and content of quality management education. Acknowledgement of gender issues and recognition of the unique perspectives, needs and experiences that women bring to our programmes make evident the need for micro and macro level changes in how we define and approach our educational mission and process.

If we no longer embrace promotion of the male model of work and management in our teaching, then we need well-developed alternatives. But, perhaps more importantly, we need to believe in the importance and viability of developing and fostering these alternatives. We have expound and thought about the need for organisational justice and valuing of diversity, yet we have created and maintained a theory base that in many cases lacks both these elements. A sweeping exploration of our beliefs and theories of organisation and management is necessary, with the gender underpinnings or implications in both accurately identified. Not only will this serve women well, but it will also provide a basis for exploring just how outmoded our theories and beliefs about organisations and management are for men, too. In addition, such an exploration offers us a model for exploring the ways in which race, caste, creed and national origin have also shaded our thinking and theoretical foundations.

We need to dig deeply into widespread pedagogical beliefs about what and how to teach. On a macro level, we need new ways of teaching that better reward collaboration and positive interdependence. We need ways of better modeling, shared leadership and encouraging the development of sophisticated interpersonal skills. We need creative options for fostering critical thinking, cooperative learning, and successful team work. We need pedagogies that enable students to fine-tune such essential skills as negotiating interests, holding others accountable, resolving conflicts, and solving problems in an increasingly diverse work place. We need more methods for encouraging entrepreneurialism and the skills this requires. We need better ways to teach flexibility. We need teaching processes that fire up students and encourage them to love learning.

On a micro level, we need to acknowledge that gender affects our views and behaviour in the classroom. We need video opportunities to see ourselves teach and supportive environments for learning from such opportunities. We need sophisticated instruments to help us explore the subtle ways in which we perpetuate inequity in our teaching. We need faculty development programmes to engage instructors in such learning ventures and reward systems that acknowledge and value the difficulties of change and the development of teaching alternatives.

If we want to move beyond our present methods and programmes, we need to imagine more experience-based learning and management education beyond the classroom walls. We need to encourage students actively by defining learning projects and field-based experiences that truly encourage them, that is, projects that interest and belong to students rather than faculty. We need to rely more in our teaching on student-generated standards and developmentally appropriate activities that encourage students to take increasing responsibility for their own learning. We need to define the role of instructor as that of a guide and an encourager — an experienced learner who knows how to weave theory from action and who assists all students in developing the confidence and skills for reflective practitioners.

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Application form and prospectus will also be available from the N.S.D. Bookshop w.e.f. 20.03.1997.

Last Date for Receipt of Request for application form & prospectus by post 30.03.1997
Completed application forms duly filled in by the candidate be sent to the Assistant Registrar (Academics) by 20.04.1997

Note : No Application will be entertained after the aforesaid date.

What Do Home Science Students of Baroda Think About Legal Education?

Rameshwari Pandya*

Introduction

Since the attainment of independence several measures have been taken to improve the status of women. These laws have been intended to bring the legal status of women in equality with men. The unfortunate part is that many women in India are quite ignorant of the laws and not much trouble is taken by the authorities to make women aware of them. Many laws are thrust aside by orthodox priests or the people themselves, deriving excuses from traditions and customs. In order to remove the social inequality in the field of legal provision, it is necessary that laws are implemented adequately and people are educated to follow them. There are many laws which have been enacted for women's equal status, but in the absence of translating them into practice, they have remained only on paper. To make this a reality and movement, an awakening is necessary. This would rouse the social conscience of people.

Legal education in Home Science should be considered more seriously than anything else because in recent years crime against women has assumed giant proportions. Even facts related to figures on crime serve as an eye opener for Home Scientists whose activities are geared towards betterment of family, community and nation, keeping the women as their focus.

Purpose of the Study

The main purpose of the study was to find out the characteristics of first year Home Science students, their sources of information about laws pertaining to women and their opinions towards legal education for girls and their level of legal awareness.

Methodology

A questionnaire was used for collection of data in the month of March 1994. Sample consisted of sixty First Year students from Faculty of Home Science, M.S. University, Baroda. Percentage and Chi-square were used for statistical analysis of data.

Findings of the Study

(a) *Characteristics of Respondents*

The findings showed that most of the respondents were aged between 18 and 19 years (Table 1). Age of the respondents is likely to have direct bearing upon their values and attitudes as well as their outlook. Such findings suggest that students from same class do not vary significantly in terms of age, as is ordinarily known. The percentage of respondents who had offered Art/Commerce/Science at school did not differ. Similarly respondents from English medium at higher secondary education and those from Gujarati medium were more or less equal in percentage. The smallest percentage had medium of instruction as Hindi.

Less than 50% of the respondents had obtained second class in 12th standard. Little more than one fifth of the respondents only had obtained first class in 12th standard as seen in Table 1. The mothers of 65 per cent of the respondents were housewives. Those who were working served as teachers, doctors, working in banks, running own business, working as LIC agents, Lecturers, etc. An almost equal number of respondents had fathers who were in service or doing their own business. An overwhelming majority of the respondents were Hindu, only two respondents were found to be non-Hindu, one was a Sikh and the other a Christian.

(b) *Sources of Information for Legal Education*

Among the sources of dissemination of knowledge of legal rights, the most important one has been the T.V. The sources through which first Year Home Science students could gather legal information included mass-media like T.V., newspapers, books, periodicals. Besides, the people with whom they had informal contacts also acted as a source in dissemination of information.

It may be said that persuasive communication affects behaviour and thought process of individuals and as such informal agents of communication

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and dissemination of knowledge exert direct impact upon people. This is clear by the present investigation. Informal sources like family members, friends and neighbours play prominent role in making people aware of provision of legal rights. The largest section of respondents had known the rights through informal sources.

As Table 2 depicts, among the formal sources, radio, magazines and newspapers have played a secondary role. Their role is subdued in imparting legal education whereas T.V. is most popular medium which respondents reported as the source of information of law. Most negligible has been the part played by the schools and the voluntary agencies in imparting legal education.

Table 1. Percentage Distribution of the Respondents according to their Characteristics

(N = 60)

	f	%
Age (Years)		
18	28	47
19	28	47
20	4	6
Stream		
Science	20	33
Arts	15	24
Commerce	20	33
Home Science	5	8
Medium of Instruction		
English	27	45
Gujarati	30	50
Hindi	3	5
Class obtained		
1st	17	28
IInd	25	42
IIIrd	18	30
Father's Occupation		
Business	31	51
Service	28	46
Special case (Father expired)	1	1
Mother's Occupation		
Employed	21	35.00
Housewife	39	66.00
Religion		
Hindu	58	96.66
Non-Hindu (Sikh, Christian)	2	3.44

Table 2. Percentage Distribution of the Respondents according to the sources of Information regarding Law.

(N = 60)

Sources	*f*	%
Informal		
Family	51	85
Friends	31	52
Neighbours	6	10
Formal		
School/College	5	8
Magazine	30	50
Newspaper	32	53
Radio	7	11
T.V.	54	90
Films	34	57
Courses taken at		
School	5	8
Outside School by other agency	4	7
Course not taken	51	85

(c) *Opinions About Legal Education*

The largest percentage of respondents have favoured legal education as desirable for Home Science students. They opined that publicity of women's right is necessary and legal education is necessary for equality of both the sexes. Table 3 further shows that majority of the respondents believed that society would progress when men and women are given equal status and legal education would help the women in solving their problem faster. Similarly majority of respondents had found it desirable to continue present trend of equality between husband and wife. Majority of the respondents were of the opinion that legal education is very desirable for Home Science students as they are mostly female students. Mere enactment of social legislations would not better the condition of women unless they are given legal education.

(d) *Awareness Regarding Laws*

Since the attainment of independence, several measures have been taken to improve the status of women. These legal measures are (1) Property rights, (2) Legislations related to marriage, (3) Rights related to divorce, (4) Prohibition of dowry,

(5) Law regarding abortion, (6) Law against rape, (7) Law against eve-teasing, and (8) Law against polygamous marriage.

Table 4 shows that 44.9 per cent respondents had correct knowledge about the laws that sons as well as daughters can legally inherit the property of their parents and the maintenance should be given by husband to his divorced wife and children. Rest of the respondents had no knowledge that a man cannot have legally more than one wife. Surprisingly, majority of respondents were not aware of the fact that an eve-teaser can be legally punished.

About existence of law against rape, only 44.6 per cent of the respondents knew. Rest of the respondents were unaware about this law. Table 4 further shows that a very large number of respondents 61.0 per cent did not know about existence of other laws related to women.

Opinions and Awareness Regarding Laws Across Student's Variables

The preceding discussion reveals that the Home Science students favoured various legal rights and that some respondents were more favourably inclined towards the women's rights than others. Attitudes and opinions of human beings are shaped by a wide variety of factors. The surrounding social milieu, the background like mother's occupation, father's occupation, stream and medium of study, religion they belong and the extent of media exposure, help in widening one's mental horizon. (Tables 5 to 18).

Respondents from Arts, Commerce or Science studied through English, Gujarati or Hindi medium did not seem to affect the opinion as well as awareness of respondents regarding laws related to women.

Table 3. Percentage Distribution of Respondents according to their Opinions about Legal Education

(N = 60)

Sr. No.	Opinions	f	%
1.	Legal education is desirable for Home Science students	51	85
2.	Publicity of women's rights is necessary	47	78
3.	Legal education is necessary for equality of sexes	45	75
4.	Society will progress when men and women are given equal status	43	71
5.	Legal education will help the women in solving their problems	45	75
6.	Present trend of equality between husband and wife is desirable	46	76

Table 4. Percentage Distribution of Respondents according to their Awareness regarding Law

(N = 60)

Sr. No.	Items Regarding Awareness	Correct Awareness	
		f	%
1	Correct age of marriage (a) Boys 21 Yrs (b) Girls 18 Yrs	40	67
2	Rights of marriage same for men and women	9	15
3	Law can help a wife, when husband beats her	20	33
4.	Law can interfere when there are differences among husbands and wives	25	42
5.	Giving and taking of dowry is illegal	50	83
6.	Divorce is permitted by law	48	80
7.	Women are free to dissolve their intolerable married life	29	48
8.	MTP is legal in Gujarat	23	38
9.	Sons as well as daughters legally inherit the property of their parents	27	45
10.	Daughters can have their share in father's property	29	48
11.	Legally man can have second marriage	35	58
12.	Man can have legally more than two wives	33	55
13.	Eve-teasers can be legally punished	14	23
14.	Is there any law against rape?	28	44
15.	Maintenance to be given by husband to his divorced wife and children	27	45

Respondents who had secured first class in 12th standard had more favourable opinion towards legal education to be given to the Home Science students. Same trend is observed in case of the legal awareness.

Significant variation emerged when opinions and legal awareness of the respondents was studied in relation to the different class obtained.

As regards relationship between religion and the opinion about legal education, no significant relationship was found to exist.

It is commonly presumed that occupational status, or in other words, the nature of job that a person undertakes exerts impact on the mental horizon of the person. His or her world view is shaped, to some extent, by his or her mother's and father's occupation. But this assumption does not seem to hold true particularly in case of father's occupation.

Mother's employment status had significant relationship as far as the opinions towards legal education as well as knowledge regarding various laws related to women, were concerned.

This may be due to the fact that women play a pivotal force in every family. They shape the family and inculcate habits in their children. It has been known that education of mother means education of the family. If a mother is aware about her rights and duties, she will transmit that awareness to the family members more easily.

Table 5. Opinions of Respondents about Legal Education according to the Age

(N = 60)

Opinions about Legal Education	*Age Group*						*Total %*
	18 Yrs N=28		*19 Yrs N=28*		*20 Yrs N=4*		
	f	%	*f*	%	*f*	%	
Favourable	20	71	24	83	2	50	77
Unfavourable	8	28	4	16	2	50	23

x^2 tab = 5.99 x^2 tab > x^2 Cal

x^2 cal = 3.39 ∴ it is insignificant at 0.05 d.f.

Table 6. Opinions of Respondents about Legal Education according to the Stream of Study

(N = 60)

Opinions about Legal Education	*Stream in Higher Secondary*						*Total %*
	Arts N=20		*Science N=20*		*Commerce N=20*		
	f	%	*f*	%	*f*	%	
Favourable	15	75	15	75	16	80	77
Unfavourable	5	25	5	25	4	20	23

x^2 tab = 5.99 x^2 tab > x^2 Cal

x^2 cal = 0.19 ∴ it is insignificant at 0.05 d.f.

Table 7. Opinions of Respondents about Legal Education according to the Medium of Instruction

(N = 60)

Opinions about Legal Education	*Medium of Instruction*						*Total %*
	English *N=27*		Gujarati *N=30*		Any other *N=3*		
	f	%	*f*	%	*f*	%	
Favourable	23	85	20	67	3	100	77
Unfavourable	4	15	10	33	0	00	23

x^2 tab = 5.99 x^2 tab > x^2 Cal

x^2 cal = 3.68 **∴ it is insignificant at 0.05 d.f.**

Table 8. Opinions of Respondents about Legal Education according to the Class in XIIth Standard

(N = 60)

Opinions about Legal Education	*Class in XIIth Standard*						*Total %*
	Ist N=17		*IInd N=25*		*IIIrd N=18*		
	f	*%*	*f*	*%*	*f*	*%*	
Favourable	17	100	20	80	9	50	77
Unfavourable	00	00	5	20	9	50	23

x^2 tab = 5.99 x^2 tab > x^2 Cal

x^2 cal = 12.50 ∴ it is insignificant at 0.05 d.f.

Table 9. Opinions of Respondents about Legal Education according to Father's Occupation

(N = 60)

Opinions about Legal Education	*Father's Occupation*						*Total %*
	Service N=28		*Business N=31*		*Other N=1*		
	f	*%*	*f*	*%*	*f*	*%*	
Favourable	22	79	23	74	1	100	77
Unfavourable	6	21	8	26	0	00	23

x^2 *tab = 5.99* x^2 *tab >* x^2 *Cal*

x^2 cal = 0.99 ∴ it is insignificant at 0.05 d.f.

Table 10. Opinions of Respondents about Legal Education according to Mother's Occupation.

(N = 60)

Opinions about Legal Education	*Mother's Occupation* *%*				*Total*
	Employed N=21		*Unemployed N=39*		
	f	*%*	*f*	*%*	
Favourable	20	95	26	67	77
Unfavourable	1	5	13	33	23

x^2 tab = 3.84 x^2 tab > x^2 Cal

x^2 cal = 4.74 ∴ it is insignificant at 0.05 d.f.

Table 11. Opinions of Respondents about Legal Education according to their Religion

(N = 60)

Opinions about Legal Education	*Religion*				*Total %*
	Hindu N=58		*Non-Hindu N=2*		
	f	*%*	*f*	*%*	
Favourable	44	76	2	100	77
Unfavourable	14	24	0	00	23

x^2 tab = 3,84 x^2 tab > x^2 Cal

x^2 cal = 0.006 ∴ it is insignificant at 0.05 d.f.

Table 12. Level of Awareness of Respondents about Legal Education according to the Age.

(N = 60)

Level of Awareness	*Age Group*						*Total*
	18 Yrs N=28		*19 Yrs N=28*		*20 Yrs N=4*		*%*
	f	*%*	*f*	*%*	*f*	*%*	
Good	5	18	3	11	0	00	13
Average	10	36	13	46	0	00	38
Poor	13	46	12	43	4	100	48

x^2 tab = 9.49 x^2 tab > x^2 Cal

x^2 cal = 5.52 ∴ it is insignificant at 0.05 d.f.

Table 13. Level of Awareness of Respondents about Legal Education according to the Stream of Study

(N = 60)

Level of Awareness	*Stream of Study*						*Total*
	Arts N=20		*Science N=20*		*Commerce N=20*		*%*
	f	*%*	*f*	*%*	*f*	*%*	
Good	3	15	3	15	2	10	13
Average	7	35	8	40	8	40	38
Poor	10	50	9	45	10	50	48

x^2 tab = 9.49 x^2 tab > x^2 Cal

x^2 cal = 0.40 ∴ it is insignificant at 0.05 d.f.

Table 14. Level of Awareness of Respondents about Legal Education according to the Medium of Instruction

(N = 60)

Level of Awareness	*Medium of Instruction*						*Total*
	English N=27		*Gujarati N=30*		*Any other N=3*		*%*
	f	*%*	*f*	*%*	*f*	*%*	
Good	6	22	2	7	0	00	13
Average	12	44	11	34	0	00	38
Poor	9	33	17	57	3	100	48

x^2 tab = 9.49 x^2 tab > x^2 Cal

x^2 cal = 7.78 ∴ it is insignificant at 0.05 d.f.

Table 15. Level of Awareness of Respondents about Legal Education according to the Class in XIIth Standard

(N = 60)

Level of Awareness	*Class in XIIth Standard*						*Total*
	Ist N=17		*IInd N=25*		*IIIrd N=18*		*%*
	f	*%*	*f*	*%*	*f*	*%*	
Good	5	29	3	12	0	00	13
Average	9	53	14	56	0	00	38
Poor	3	18	8	32	18	100	48

x^2 tab = 9.49 x^2 tab > x^2 Cal

x^2 cal = 30.32 ∴ it is insignificant at 0.05 d.f.

Table 16. Level of Awareness of Respondents about Legal Education according to their Father's Occupation

(N = 60)

Level of Awareness	*Father's Occupation*						*Total*
	Service		*Business*		*		%
	N=28		*N=31*		*N=1*		
	f	%	*f*	%	*f*	%	
Good	4	14	4	13	0	00	13
Average	15	54	7	22	1	100	38
Poor	9	32	20	65	0	00	48

*Father expired

x^2 tab = 9.49 x^2 tab > x^2 Cal

x^2 cal = 8.62 ∴ it is insignificant at 0.05 d.f.

Table 17. Level of Awareness of Respondents About Legal Education According to their Mother's Occupation

(N = 60)

Level of Awareness	*Mother's Occupation*				*Total*
	Employed		*Housewife*		%
	N=21		*N=39*		
	f	%	*f*	%	
Good	4	19	4	10	13
Average	13	62	10	26	38
Poor	*4*	*19*	25	64	48

x^2 tab = 5.99 x^2 tab < x^2 Cal

x^2 cal = 11.20 ∴ it is insignificant at 0.05 d.f.

Table 18. Level of Awareness of Respondents about Legal Education according to their Religion

(N = 60)

Level of Awareness	*Religion*				*Total*
	Hindu		*Non-Hindu*		%
	N=58		*N=2*		
	f	%	*f*	%	
Good	8	14	0	00	13
Average	23	40	0	00	38
Poor	27	46	2	100	48

x^2 tab = 5.99 x^2 tab > x^2 Cal

x^2 cal = 2.26 ∴ it is insignificant at 0.05 d.f.

Implications of the Study

The students of Faculty of Home Science lack awareness about various laws related to women but at the same time have favourable opinions about legal education as a course for Home Science students. This study reveals that there is lack of awareness that means there is scope of learning about different laws related to women.

It gives an insight regarding the different laws which requires more emphasis while planning the course "Women and Law". These laws need more stress than other laws as many of the respondents expressed their unawareness about their existence. It implies that a course dealing with different laws related to women can be developed.

References

1. Agarwal, B.C. and Chandiram, J. Towards equality : Women in Indian TV. *Unpublished Paper* Media Asia. 1982.
2. Antony, M.J. *Women's Rights* Clarion Books. Robo Printers, Delhi, 1989.
3. Bhoite, A. Sex ratio and the status of women in India. *Akfed Journal* 5(7), 1988.
4. Chandra, A. *Introduction to Home Science* Metropolitan Books Company Pvt. Ltd., New Delhi, 1978.
5. Chatterji, S.A. *The Indian Women's Search for an Identity*. Delhi, Vikas Publishing House, 1988.
6. Haksar, N. and Singh, A. *Demystification of Law for Women* New Delhi, Lancer Press. 1986.
7. K. Vasanthi Devi, Women's education for social change. *University News*, Oct. 8. 1985.

The Storehouse of Human Learning

Justice Ranganatha Mishra, former Chairman, National Human Rights Commission, delivered the convocation address at the Second Convocation of the Rashtriya Sanskrit Vidyapeetha(Deemed University), Tirupati. He said, "There is no branch of learning even in modern times for which there is no corresponding material available in Sanskrit language. In fact, reference to the most modern technical developments are found to have been recorded in this language. In Sanskrit writings there is the storehouse of human learning." Excerpts

One of the main objectives of this University is to preserve the Sanskrit tradition and undertake promotion of the study of the language. Sanskrit, apart from being one of the languages included in the Eighth Schedule of the Constitution, is the matrix of all Indian languages It has the richest vocabulary, the most disciplined grammar and is said to be the language with the richest literature It is said to be the language of Gods and the medium of communication in heaven — the abode of gods. It is through Sanskrit alone that the Vedic literature came to mankind and through *Sruti, Smriti* and writing — first on palm leaves and then in regular book form, the great learning has been preserved. This language has perhaps a history or more than ten thousand years and entire traditional Indian culture has been preserved through this medium.

Apart from the rich Vedic literature, enlightened human thinking in different branches of learning has, in due course, been recorded in this language. There is no branch of learning even in modern times for which there is no corresponding material available in Sanskrit language. In fact, reference to the most modern technical developments are found to have been recorded in this language. In Sanskrit writings there is the storehouse of human learning.

It has often been described as the language of the computer on account of exactitude of expressions and the capacity of the language to give commands with clarity and comprehension. Sanskrit thus began by providing the medium for the Vedic literature and has grown up to fit into the computer age. The entire human history is traceable from writings in this language.

Up to early twentieth century, Sanskrit was being taught in regular institutions, both in urban and rural areas of the country. Language scholars were held in great veneration and were being maintained by the rulers and social institutions. With the advent of independence emphasis on learning of Sanskrit has been gradually diminishing and within half a century of independence, the place of Sanskrit has gradually got sidelined . In some of the states, at the secondary stage, study of Sanskrit has been made optional and is not visible in the higher stages unless it be a Sanskrit learning institution. On account of the shift of emphasis on the status of Sanskrit, acquaintance through the educational process with grammar is reduced and as a result of this the teaching and the learning of Indian languages are gradually becoming less and less perfect. This feature which is manifested today is the result of shrinkage of emphasis on learning Sanskrit over the years and it is high time that this aspect should be noticed by the authorities incharge of policy framing in education. With a view to improving the regional languages, emphasis on grammar and the study of Sanskrit are indispensable and must be adequately recognised. Once this is understood, the need for focus on Sanskrit would be clear.

Sanskrit should not be equated with other languages like Urdu and Persian mainly on account of the fact that Sanskrit is the matrix of all Indian languages and Indian culture and tradition are retained through the medium of this language and a special place for Sanskrit automatically emerges. If this had been appropriately realized in good time, by now the study of Sanskrit would have become popular. Within this half a century of Independence, attention should also have turned to an assessment of the material in the storehouse of learning in this language. Adequate research should have already been carried on to identify the level and the heights reached in the past.

The traditional Indian exercise in developing spirituality and the mandate for establishing relationship of every individual with Nature and the unseen force responsible for his or her birth perhaps also reached the highest level of rational scientific study in India and came to be recorded in this language. Today there is a growing realisation that spirituality is essential for every individual to grow and develop. It is, therefore, necessary that all the cultural achievements which are preserved through this language should be available to the people. This can be done only by wide spread study of Sanskrit. Every university should have reasonable focus on the study of Sanskrit. Research Wings should be established and developed so that the storehouse of human learning may be thrown open and be brought close to the modern learning process. In Sanskrit universities, specialisation should be provided and greater attention should be bestowed.

Traditional Sanskrit learning is dying out. The principal reason for this situation is on account of lack of opening of employment in this sector. If more attention on the study of Sanskrit is given, research facilities are made available, teaching is made wide spread, employment facility would be available and there would be a great attraction for the study of the language. Education as a subject has now gone into the concurrent list in the Constitution. Union Government in the Ministry of Human Resource Development is keen that education should be well spread out and the level of literacy should improve. Some time back, the Supreme Court ruled that Sanskrit must be taught as an elective subject but that has not yet been appropriately enforced. In fact, some of the State Governments are not fully aware of the import of the judgement and no action has been taken to give effect to the decision. The judgement of the Supreme Court is binding on everyone including the state governments. Immediate action should be taken to ensure that the judgement is implemented and all possible steps are taken to focus attention on the study of Sanskrit.

In the past, enough efforts have been made for excellence and many of the attainments so reached have been recorded through Sanskrit on palm leaf. It is necessary that these rare palm leaf writings, which in the absence of proper attention may be lost for ever, should be collected. In every university and particularly in Sanskrit universities, a separate department should be opened for collection of these palm leaf manuscripts and attempt should be made to preserve them by scientific methods. Simultaneously, scholars should be available to read through them and have them made available for the attention of the world community.

Acharya Panini gave to this language its grammar. For the modern times, probably, grammar should be made easy and a basic form should be developed. More focus and effort should be put in for making Sanskrit a live spoken language. Some efforts are being made in different parts of the country. Societal support should be made available in a generous manner so that the language can be made popular.

The location of this university at Tirupati under the overall patronage of TTD ensures freedom from any financial deficit. Spread of the language and popularising spiritual is one of the policies of the TTD. Rapport should be maintained between the university and the TTD and several schemes which could be developed at the university level may be financially supported by TTD. If appropriate initiative is taken and the university authorities explore the possibility in this direction, I am hopeful that TTD would extend its generous support to such activities.

You are the fortunate ones who have been exposed to the great traditions of India through the medium of Sanskrit. Education fails in its purpose if it does not dispel the inner darkness and brings in enlightenment. There can really be no enlightenment and dignity of the individual cannot be properly realised unless through the help of education, a strong character is built and a life of *Sadachar* is lived. The human community all over the world is suffering on account of lack of character and want of training to adopt appropriate conduct. Main is not able to perceive his own role in managing God's creation. Indian tradition had been contributing to social good by mandating service to others. *Jiva Seva* and ever preparedness to serve others should be the obvious result of education. Society looks upon you as messengers to herald a new world. Step into the community with confidence, self reliance and a keen attitude to serve the community. There is always a place for everyone who is born into the homo sapien race. Find your place. Have abiding faith in the Creator and hold out an appropriate dose of love to facilitate building up of bridges of understanding.

I left the National Human Rights Commission only recently on reaching the age of 70. The three years I was with the Commission gave me immense scope to see human problems and take steps to ensure some solution. Problems are many and in fact are ever increasing. Violence is wide spread and is also on the increase. We have to contain violence, discipline the individual mind and generate a higher perception of good living. Let us all promise to contribute in this direction. Remember that each of us is fighting a battle within ourselves. Learn to have peace with yourselves first, then only can you have peace with others.

International Hindi Varsity at Wardha

The Central Government is reported to have decided to set up a Mahatma Gandhi International Hindi University at Wardha soon. This was revealed by the Prime Minister, Mr. H.D. Deve Gowda. He said that the Parliament had already passed the necessary Bill.

Hindi had made tremendous headway at the national and international levels. Hindi also proved that it possessed the capacity to adapt itself to the ever-changing needs and requirements of the modern world, Mr Gowda said while inaugurating the diamond jubilee celebrations of the Rastrabhasa Prachar Samiti, Wardha, founded by Mahatma Gandhi, in Calcutta recently. The Prime Minister said that the increasing use of the Hindi language in science, technology and administration had demonstrated its innate versatility.

Stating that Hindi could be used as an effective medium of communication and expression, Mr Deve Gowda appealed to the Rastrabhasa Prachar Samiti and such institutions to do some introspection and suitably modify their courses and curricula so that Hindi could attain the vigour of a much stronger vehicle of expression in keeping with modern requirements.

The Prime Minister expressed the hope that voluntary organisations dedicated to the promotion of Hindi, located in non-Hindi speaking areas, would willingly accept the great challenge and prove that Hindi was capable of becoming a much more potent medium not only of social science but also in other fields like science and technology.

He said that about 170 voluntary organisations were now engaged in the task of promotion, propagation and development of Hindi in different parts of the country, especially in the non-Hindi speaking regions.

Mr. Deve Gowda also called upon the people to rededicate themselves to the task of developing, promoting and enriching the national language along with regional languages.

Recalling the efforts of Mahatma Gandhi in promoting Hindi, Mr Sharad Pawar said that one should be proud of his mother tongue but to make the country stronger a united learning of Hindi was very important.

Swarnajayanthi Fellowships Scheme

The Finance Minister, Mr. P Chindambaram, said that the government proposed to introduce a new scheme to promote science, by which outstanding scientists below 45 years would be assisted in their efforts to attain and sustain world class excellence.

Presenting the Union Budget for 1997-98 he said the scheme, called "Swarnajayanthi" fellowships, would be launched on August 15, on the occasion of the 50th anniversary of Indian independence.

The fellowships, the details of which are to be announced by the Minister of State for Science and Technology later, is to be funded from a corpus of Rs. 50 crores to be created from out of the Department of Education's budget.

Mr Chidambaram said the scheme was being launched as tomorrow's technology was based on today's science and interest in the learning of sciences in schools and colleges was declining. "I hold the view that an MBA — even if he is from Harvard — is not a patch on scientist", he added.

The Finance Minister also announced a proposal to continue the scheme to match every additional commercial rupee earned by CSIR and ICAR laboratories, as well as the IITs, on a permanent basis and to increase the allocation for the Technology Development Board, established recently for accelerating the commercialisation of indigenous technology, to Rs. 70 crores from Rs. 30 crores provided last year.

Further, he said, the government proposed to allow Government-funded societies recognised by the Department of Scientific and Industrial Research and notified under the Income Tax Act to invest in the equity of private sector companies. The equity would, however, not be in money terms but be in the form of knowledge and know-how. The aim was to develop closer linkages between the industry and publicly-funded research laboratories.

Institution-Industry Interaction

The growing need for institution-industry interaction was stressed by academicians in a seminar on "engineering education" organised by the Sathyabhama Engineering College in Chennai recently. Improvement in quality of education should be given the utmost importance in view of the increasing competition in the job market, they said.

Dr. P. Ramarao, Chairman, Atomic Energy Regulatory Board (AERB), in his address, said educational institutions in the country should strive to become research centres.

Dr. Ramarao was conferred the Third National Science and Technology Award for Excellence instituted by the Jeppiaar Educational Trust on the occasion. The title was presented by Prof. S. Rame Gowda, Chairman, All India Council for Technical Education (AICTE).

Prof. Gowda said quality of teaching should improve as the employment arena was getting very competitive. With the entry of multinational corporations, a lot of jobs were being created in the private sector.

Mr Jeppiaar, Founder and Managing Trustee, said to promote employment opportunities for the students of the Institution, an industrial park would be created at a cost of Rs. 10 crores.

The park would help students, cutting across all disciplines, develop computer skills which had of late become inevitable in securing jobs.

It would also tie up with industries for producing ancillaries which would not only train the students, but also help them finance their studies. Dialogues had already been initiated with many leading industrial units, he said.

The interaction with industries for a hands-on training was being promoted in a big way, he said.

The industrial park would also have satellite connectivity for software exports. The syllabus for training software would be up-to-date for coping with the international developments, he said.

Various aspects of institution-university industry-AICTE interaction, constitution of a cell in AICTE for promoting the interaction and curriculum development in technical education and inclusion of industrial training as part of the curriculum would come up for discussion at the seminar, Mr. Jeppiaar said.

Restructuring Teacher Education Curriculum

A three-day National Workshop on Restructuring of Teacher Education Curriculum was organised by the Shikshan Mahavidyalaya, Institute of Advanced Studies in Education (IASE), Gujarat Vidyapith, Ahmedabad, under the sponsorship of the National Council for Teacher Education (NCTE), New Delhi. Prof. Ramlal Parikh, Chancellor, Gujarat Vidyapith, presided while Dr. J.S. Rajput, Chairman, NCTE, New Delhi, was the chief guest. Prof. R.H. Dave, Former Director, UNESCO Institute of Education, guided the deliberations.

Dr. P.G. Patel, Principal, in his welcome address introduced Dr. J.S. Rajput who launched the movement of restructuring teacher education curriculum with the co-operation of Prof. R.H. Dave.

Dr. Rajput, in his inaugural address, expressed the pleasure that Prof. R.H. Dave with his long-standing experience was with the project. He referred to the Discussion Document Curriculum framework for Teacher Education and the role of competency-based teacher education curriculum.

Prof. Dave explained in details the nature and scope of the workshop. He appreciated that the NCTE had done so much in so little time. Elementary education, he said, had become a chronic problem in India. It required not ordinary medicines, but extra ordinary medicines, he said. What kind of restructuring of teacher education curriculum in the context of this situation? What was needed was not the vertical or horizontal dimension, but the depth dimension. Teacher had to develop a set of values and commitments, he opined and discussed five points in professional commitment building. These included (i) Commitment for learners; (ii) Commitment for society; (iii) Commitment towards profession; (iv) Commitment for knowledge; and (v) Commitment for basic values.

Prof. Ramlal Parikh, in his presidential address, referred to the reports brought out by various Education Commissions. Kothari Commission over-emphasized structural aspects of school education, Radhakrishnan Commission had spelt out in details, aims of education, he said. These must be reflected in a foremost manner in restructuring Teacher-education. Emphasizing value education and commitment for basic values, he quoted Dr. Einstein who pleaded for moral values in education. Education had to evolve as an inter-disciplinary subject. Gandhiji and Vinobaji viewed education as a life-long process from womb to grave. He pointed out that isolation of education from the society was proving very harmful.

In business sessions, the focus of discussion was on teacher education curriculum framework for pre-service elementary teacher education.

As many as 50 participants from all over the country attended the workshop.

Seminar on Higher Education

"Academicians and educationists should strive for providing education at all levels exclusively in the student's mother tongue. This, however, does not mean that English can be ignored. But if a society is to have a balanced development, imparting knowledge in the mother tongue holds the key. Mahatma Gandhi also held a similar view", said Mr. K. Anbazhagan, State Education Minister. He was speaking at the inauguration of a seminar on higher education organised by the Tamil Nadu Principals' Association (TANPA) and Indian College Forum (IFC) in Chennai recently.

Teaching of subjects such as law, engineering and medicine should be in Tamil. Otherwise, an impression would be created among the people that Tamil was not fit for teaching such subjects.

Though people would not be compelled to learn in Tamil it would be ideal for colleges and other educational institutions to have Tamil as the medium of instruction for technical and other professional courses. The State Government would support endeavours for bringing out books in Tamil on those subjects.

Mr. P.T.R. Palanivel Rajan, Assembly Speaker, who presided, lamented that "trade unionisation" of higher education was a dangerous trend in the state. The real power in the institutions remained with the unions which called themselves "teachers' associations". Principals of colleges had to follow the diktats of the unions. The trend had grown to dangerous levels and the institutions were getting 'ruined'.

Dr. G.D. Sharma, Secretary, University Grants Commission (UGC), said higher education should not only be relevant to the society's needs but also to the requirements of the industry. During the Ninth Plan Period, attempts would be made to provide facilities in colleges located in backward areas comparable to those in urban centres.

Dr. Raja, President, TANPA, wanted the Government to have a uniform pay structure for college Principals throughout the State. Ms. K.S. Lakshmi, Principal, Meenakshi College for Women, which hosted the seminar, and Prof. R. Perumalsamy, Syndicate Member, Manomaniam Sundaranar University, Tiruneveli, highlighted the issues of concern in higher education.

At another meeting, Dr. Sharma indicated that regulations might be introduced for self financing colleges and foreign universities which were marketing their courses in India during the next Plan period.

JNTU Convocation

The Chairman of the All-India Council for Technical Education, Dr Rame Gowda, called upon the students to overcome the lure of dollars. He was speaking at the 14th convocation of Jawaharlal Nehru Technological University in Hyderabad recently. He said, "Just for a few thousand dollars, one should not shirk one's moral responsibility of serving the millions of poor at whose cost one gets the degree", he said.

Dr. Gowda said the government was spending about Rs. 5 lakhs on each student at the premier institutions like Indian Institutes of Technology. But the moment a student stepped into the campus, he or she started corresponding with Western and American universities and companies exploring ways to fly away, he said. The premier institutions of the country were being run at the cost of the millions of poor people who were deprived of even primary education, he pointed out.

However, Dr. Gowda added that exchange of technology was the order of the day in the changed scenario of global village. He also asked the technical graduates to upgrade themselves continuously to keep in tune with the developments taking place in their respective subjects.

Dr. P. Dayaratnam, Vice-Chancellor, said the university was making all efforts to transform the technological profile of India and help the country face the challenges of 21st century with confidence and courage.

The Governor and Chancellor of the university, Mr Krishan Kant, presented degrees and awards to the outstanding students. Speaking on the occasion he asked the engineers to take up research in solar energy and make it available for the poor in every nook and corner of the State.

Decrying the science and technology becoming chauvinistic following the new world trade order, the Governor said over protectionism would hamper the expansion of global trade and go against the very principle underlying free trade.

News from Agricultural Universities

Meat Processing and Packaging Technology

A short-term training course on "Meat Processing and Packaging Technology", sponsored by the Ministry of Food Processing Industries, Government of India, was organised at Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai. Inaugurating the course, Dr. S. Shanmugasundaram, Vice-Chancellor, said that India possessed largest livestock resources among world countries and the meat industry in India played a major role in the upliftment of rural economy and to generate gainful employment. The potentiality of Indian Meat Industry could be seen by the rapid growth of export earnings of meat and meat by-products for the past one decade from Rs. 67 crores in 1985-86 to Rs. 362 crores in 1993-94, he added. He also pointed out that WB-OECD reported that India would earn annual benefit of US $ 4.6 billion (about Rs. 16,560 crores) by the year 2002 AD only through export of livestock products.

Dr. M. Ranganathan, former Professor & Head, Department of Meat Inspection, Madras Veterinary College, in his valedictory address, emphasised the importance of production of healthy animals, humane method of slaughter of animals and hygienic processing and packaging of meat for the local customer and export trade.

Dr. R. Kadirvel, the Dean, Madras Veterinary College, in his address, stressed the need for quality assurance with regard to meat and meat products and maintaining the assured standards in the production of wholesome meat. He also pointed out the existence of export potential of meat from India, provided the meat producers, the processors and the exporters adhered to the quality standards prescribed by the importing countries.

26 participants from the various parts of the country involved in the field of Meat Science and Technology attended the training programme.

Animal Husbandry Workshop at CCSHAU

A 2-day animal husbandry workshop was recently inaugurated by Mr. Harminder Singh, Animal Husbandry Minister, Haryana at the Chaudhary Charan Singh Haryana Agricultural University (CCSHAU). Speaking on the occasion the Minister said the scientists had achieved a lot in veterinary and animal husbandry, but their findings had not fully percolated to the grassroot level, probably due to poor extension services rendered by the extension personnel.

Mr. Singh revealed that to improve the lot of livestock in the state the government had planned to open 20 new veterinary hospitals and upgrade the existing 80 veterinary dispensaries. Similarly, 1400 semen centres had been set up in the state. But he expressed his displeasure over the artificial insemination services being rendered in the veterinary dispensaries.

Applauding the researches being conduced in vet. and animal sciences at CCSHAU, the Minister called upon the scientists to carry out problem oriented researches and try to conserve and improve indigenous breeds in view of their aclamatization to the local conditions as well as the limited resources available with the farmers to feed and nurture them.

Prof. J.B. Chowdhury, Vice-Chancellor, CCSHAU, who presided, said that the livestock had assumed significance in the changed economy. He said that importance at par with agriculture should be given to this sector.

He said that Haryana had very good germplasm of cattle, sheep and goat. So instead of going for exotic breeds we should concentrate on genetically improving and conserving indigenous germplasm like Murrah buffalo and Haryana cattle which were aclamatized to the local conditions.

Prof. Chowdhury emphasised on guiding researches for early diagnosis of livestock diseases and developing effective vaccines and animal disease forecasting system.

Mr. L.M. Goel, Financial Commissioner and Secretary, Animal Husbandry, expressed that unless animal husbandry personnel were made aware of the innovations, these could not percolate to the grassroot level. He disclosed that his department had made compulsory 3-month orientation programme before new veterinary surgeons were inducted in the department. He said efforts were being made to locate and preserve good germplasm of livestock in the state.

News from UGC

Countrywide Classroom Programme

Between 23rd and 31st March, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

23.3.97

"The Good Doctor-II"
"Odissi : The Art of Expression - III Pallavi and Moksha"
"Telephone Manners - I"

25.3.97

"Perspectives in Physics"
"Vitamin D : Sunshine Asset"
"Human Genetics-Chromosome Aberration-II"

27.3.97

"Question Time"
"Universal Grammar and Syntactic Theory"

29.3.97

"A Date with Maths-II"
"The Kagzi Trail"
"Aquatic Fungi"

30.3.97

"Kathak"
"Mahatma Gandhi as a Journalist-I"
"Telephone Manners-II : Official Calls"

31.3.97

No Telecast

IInd Transmission

1.00 p.m. to 2.00 p.m.

23.3.97

No Telecast

24.3.97

"Bubbles and Their Physics"
"Consumer Protection"
"Artificial Insemination of Cattle"

25.3.97

"Keep the Crab Away : Preventing Cancer"
"Corrosion in Industries: Causes and Control-II"
"Overhead Projector"

26.3.97

"The Story of a Carpet"
"Archaic Scripts in India-I"
"Cousins and Distant Cousins-II"

27.3.97

"The Angle of Hope Sir U.N. Brahmachari"
"Post Colonial English Literature"
"The Gasping"

28.3.97

"Coleridge's Lament"
"P : An Unending Story in Mathematics"
"Elephant Country"

29.3.97

"Divine Hue's : Nathdwara Paintings"
"Understanding Cinema-X : Film and Spectator Relationship"
"Ethics in American Journalism"

30.3.97

No Telecast

31.3.97

"Antar Jyotir, Bahir Jyotir"
"Dryland Horticulture: A Sustainable Land Use Option"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

24.3.97

"एक खनिज झरने की सैर"
"मालवा के सिक्के"

26.3.97

"मदर डेयरी : फाउन्टेन ऑफ ग्रोथ"
"लाईकन"

28.3.97

"महापिरामिड : मकबरा या वेद्यशाला"

31.3.97

"हिन्दुस्तानी जुबाने विदेशों में"

News from Abroad

Education Technology Interface

An International Conference on Education Technology : Asking the Right Questions will be held on September 17-20, 1997 at Penn State University Park Campus, State College, Pennsylvania.

The focus of this conference (honring the seminal work of Jacques Ellul and Ivan Illich) is an examination of the key role of educational policy in relation to the expansion of technology and its effect on personal and social life. How has education affected the growth of a technological society, and what are the benefits and costs of that growth? Conversely, in what ways is technology transforming the educational process, and what are the costs and benefits of that transformation?

The topics proposed to be discussed at the conference include (i) Technology, Education, and the Possibility of Human Culture; (ii) Technology, Education, and the Person; (iii) Technology, Education, and the Social/Economic Order; and (iv) Technology, Education, and the "Third World".

Further details may be had from the conference office located at 406 Rackley Building, The Pennsylvania State University, University Park PA 16802-3203, USA.

NATIONAL DAIRY RESEARCH INSTITUTE

(DEEMED UNIVERSITY)
(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)
KARNAL - 132001 (HARYANA)

ICAR

ADMISSION NOTICE - 1997-98

A competitive written examination on all India basis for admission to the following courses will be held at thirteen centres of the country (except for Ph.D. which will be held at Karnal only) on 19th and 20th June, 1997.

(A) **B.Tech. (Dairy Technology):**

Eligibility: 10+2 or its equivalent examination with Physics, Chemistry, Mathematics and English from a recognised Board/University, with 55 percent marks (50 percent for SC/ST candidates) or equivalent GPA in the aggregate of Physics, Chemistry and Mathematics.

(B) **Master in Dairying:** Dairy Microbiology, Dairy Chemistry, Dairy Technology, Dairy Engineering, Animal Biochemistry, Animal Genetics & Breeding, Livestock Production & Management, Animal Nutrition, Animal Physiology, Dairy Economics, Dairy Extension Education, and Animal Biotechnology.

Eligibility: Bachelor's degree with 60 percent marks (55 percent marks for SC/ST candidates) or equivalent GPA in Pure Sciences, Agriculture, Veterinary Science, Animal Sciences, Dairying, Food Technology, Engineering and Home Science

(C) **Ph.D. Dairying** in all the above disciplines as in (B) except Animal Biotechnology

Eligibility: Master's degree in relevant area with 60 percent marks (55 percent marks for SC/ST candidates) or equivalent GPA.

(D) **National Dairy Diploma (Dairy Technology):** At Southern Regional Station of National Dairy Research Institute, Bangalore

Eligibility: 10+2 or its equivalent examination with Physics, Chemistry, Mathematics and English from a recognised Board/University, with 50 percent marks (45 percent for SC/ST candidates) or equivalent GPA in the aggregate of Physics, Chemistry and Mathematics

How to Apply: Information Bulletin and application form can be obtained by post from Registrar, National Dairy Research Institute, Karnal-132001 (Haryana) by submitting a Bank Draft for Rs 60/- drawn in favour of **"ICAR UNIT, NDRI, Karnal"** payable on any nationalised Bank at Karnal. Cheques/Postal Orders/Money Orders will not be accepted. The candidates should also send a self-addressed envelope of minimum size of 20cm x 25cm (8" x 10") with Rs. 6/- worth stamp (Rs. 16/- worth stamp, if required by registered post) affixed and subscribing the course on the left hand top corner

While requesting for Information Bulletin and Application Form, following information should be given:

1. Name (in capital letters)
2. Full postal address with PIN Code (in capital letters)
3. The course in which the candidate wants admission (State only one of the following. B Tech., Master, Ph.D. or Diploma)
4. Details of the Bank Draft enclosed i.e. (a) Name of Issuing Bank; (b) Bank Draft No., Date and Amount i.e. Rs. 60/-.

Application Forms for sale will be available from : 2.4.97 to 13.5.97 (By Post) and upto 17.5.97 at the counter of State Bank of Patiala, NDRI, Karnal/Cashier, NDRI Karnal.

For details including number of total seats in each course, seats reserved for SC/ST, last date for receipt of applications and Centres of Examination, kindly refer to Information Bulletin 1997-98.

A Welcome Addition to Black Feminist Criticism

K. Venkata Reddy*

Kashinath Ranveer. Black Feminist Consciousness : A Study of Black Women Writers. Jaipur, Printwell, Rupa Offset Printers, 1995. P. 281. Rs. 425.00

Although black women writers played a significant role in making and developing Black literature, their contribution to the growth of this powerful literature was ignored and neglected till a few decades ago. Not only black women writers have been "disenfranchised" from critical work by white women scholars on the "female tradition", but they also have been frequently excised from those on the Afro-American literary tradition by black scholars, most of whom are males.

Black women's literary tradition can be traced back to Philips Weatley in the eighteenth century down to the boom period — the 1970s and the 1980s with its remarkable talented writers like Paule Marshall, Alice Walker, Toni Morrison and Gloria Naylor, compassing the pioneering work of Zora Hurston in the 1940s. Barbara Christian calls it the "Development of a Tradition" meaning that it has been a continuously evolving process, if one can trace the development of the black women's self from its infantile stage of invisibility to its present stage of self-definition and self-assertion.

A survey of black women writers tradition reveals that black women writers could discover the positive-self in women and, what is more, give a true picture of womanhood in all its density and complexity. *Black Feminist Consciousness* by Kashinath Ranveer is a right step in this direction. At once a maiden attempt and a welcome addition on the growing feminist criticism by an Indian scholar, the book seeks to analyse and assess the origin, nature and development of black feminist consciousness in the novels of Alice Walker, Toni Morrison and Gloria Naylor, thereby placing these major contemporary African-American women writers in the historical perspective of Black women's literary traditions.

The author rightly observes that a feeling of black feminist consciousness is created by an awakening that one is oppressed, not because one is ignorant, not because one is lazy, not because one is stupid, but just because one is black and female. In other words, black feminist consciousness is an awareness about contradictions that a black woman faces in her life as a black, female and, above all, as a poor person.

Divided into six Chapters, *Black Feminist Consciousness* is concerned with the creative sources, literary devices and the fictional strategies that Alice Walker, Toni Morrison and Gloria Naylor bring to bear upon their subjects. The first two introductory chapters present the historical perspective of black women's literary tradition showing how the black women have been reclaiming their lost womanhood and self through their art and literature.

The third chapter shows how Gloria Naylor projects black women's predicament in white America and delineates the way they become aware about themselves and their life. If her first novel, *The Women of Brewster Place*, deals with black women who are totally trapped by the iniquitous system, her second novel, *Linden Hills*, shows how black women are oppressed by black men themselves. In her most recent novel, *Mama Day*, Naylor explores the question of self-identity and contrasts the mainstream society with the isolated black community.

The fourth chapter seeks to describe how Alice Walkar, who claims to be a womanist rather than a black feminist, recreates a new world of order defined and determined by the female of the species. It shows how, inspired by the rediscovery of Africa and the power of blackness, Walkar rewrites the social history from the perspective of a womanist consciousness through a series of

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Prof. & Head, Department of English and Comparative Literature, Sri Krishnadevaraya University, Anantapur-515 003 (AP).

short stories — *In Love and Trouble, and you Can't keep a Good Woman Down* and the novels *The Third Life of Grange Copeland, Meridian, The Color Purple* and *The Temple of My Familiar*. Although, as a black womanist novelist, Alice Walkar is after the 'Whole truth' of African-American life, her major concern is the black women themselves. As the white man is the symbol of black man's oppression, she depicts the black man as a symbol of black woman's oppression. The chapter demonstrates how Walkar, through a series of black women characters Margaret, Mem, Josie, Roselily, Myrna, Meredian, Celie and Fanny — creates a saga wherein the womanist consciousness surfaces.

The fifth chapter is concerned with Toni Morrison's contribution to the tradition of the black feminist consciousness. It shows how Morrison's novels — *The Bluest Eye, Sula, Song of Solomon, Tar Baby* and *Beloved*, (*Jazzy*, the latest novel, not being included in the present study) — express a strong critique of the male dominance and as a result her female protagonists create a world of their own. *The Bluest Eye* investigates the effects of the beauty standards of the dominant American culture on the self-image of the American female adolescent. Morrison's primary focus in *Sula* is on individualism of the African woman. Though *Song of Solomon* does not focus on the concept of woman, it does provide a critique of the male dominance. *Tar Baby* is a journey of a black woman who struggles to come to terms with her aspirations as a modern materialist, *Beloved*, Morrison's masterpiece, expresses the black feminist consciousness in a significant way.

The concluding chapter sums up the main argument of the book driving home that Gloria Naylor, Alice Walkar and Toni Morrison, who trace out the diverse experiences of the black women in a hostile environment, constitute the vanguard of brewing protest movement which upholds the dignity of a female and exposes the designs of rapacious men.

Thus, *Black Feminist Conciousness* by Kashinath Ranveer is a successful attempt at evaluating the thematic concerns of the triumvirate of black women writers against the historical evidence and the preceding literary tradition comparing their significant achievements with the contemporary feminist consciousness. It pinpoints how these black women writers project the universals of feminist consciousness through modes of passionately narrative structures compassionately recounting a social crisis with all the artistic abilities at their command. The author rightly points out that it is only the black female protagonists of Alice Walkar who succeed in creating a new social order, though all the three black women writers reveal black feminist consciousness in their respective works.

Furthermore, the comprehensive analysis of the black feminist consciousness matched with the

UNIVERSITY NEWS

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(See Rule 8)

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I, Sutinder Singh, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-
Publisher

lucid presentation of the arguments makes the book eminently readable. But, at the same time, the book is not free from certain limitations. The author does not make any attempt to show how the chosen black women writers — Gloria Naylor, Alice Walkar and Toni Morrison — are essentially *fictional artists achieving as* they do a harmonious fusion of their black feminist consciousness and their artistic sensibility.

Secondly, the author would have done well to attempt a comparison of Alice Walkar, Toni Morrison and Gloria Naylor with novelists of other countries and climes who are committed to similar political and social concerns. For instance, as novelists artistically dealing with racism and sexism as sources of oppression of black women in white America, Walkar, Morrison and Naylor remind us of Anita Desai, a contemporary Indian woman novelist in English who sensitively presents female alienation and oppression in the post-colonial Indian society. Like the American black women writers, Anita Desai deals with the world of lonesome and sensitive heroines — Maya, Monisha, Sita and Nanda Kaul — who are pitted against the dehumanizing forces abroad in Indian society

Nonetheless, the comprehensive analysis of the socio-historical background coupled with the lucid exposition of the "triple jeopardy" that the African American women have always faced makes the book exceedingly rich and eminently readable. It is, indeed, a welcome addition to the growing body of critical literature on the steadily developing African American fiction.

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto 15th April, 1997 for the following posts under the Council's Institute/Centres:-

(A) AT THE NATIONAL INSTITUTE OF VIROLOGY, PUNE: DIRECTOR (One Post) (Scale of pay of Rs. 5900-200-6700)

The NIV is a prestigious Research Institute engaged in research on different aspects of viral infections viz. virology, epidemiology, molecular biology, biotechnology, entomology, etc. It has excellent facilities for research including modern equipment, animal house, library, internet facilities and other infrastructure. NIV has field stations in Karnataka and U.P. for undertaking epidemiological and other studies on viral diseases. *A Microbial Containment Complex is also under construction by the NIV at Pune.*

Qualification & Experience: Essential: (ia) M.B.B.S./B.V.Sc./ M.Sc. (ib) M.D./ M.V.Sc/Ph.D/D.Sc in Medicine/Pathology/Microbiology/Public Health or related disciplines. (ii) Research experience of 15 years with original work to the credit of the candidate (as evidenced by scientific publications in standard journals). (iii) Managerial experience in a responsible capacity in a reputed Research Organisation/Institute. **Desirable :** (i) Research experience on viral diseases including arthopod-born viruses (ii) Experience in field investigations of viral diseases. (iii) Diploma in Medical Virology. **Job Requirements :** This is a top research management post concerned with research on viruses and viral diseases on public health importance such as Japanese Encephalitis, Dengue, Kyasanur Forese Diseases/Hepatitis, etc. The incumbent is expected to formulate and implement research programmes and also collaborate with reputed Institutes in India and abroad The Director also has to interact with various State Health Authorities for investigating outbreaks of viral diseases. He/She should have high leadership quality for taking overall responsibility for research and managerial function within the framework of the ICMR system and for ensuring a congenial atmosphere conducive for creative research.

(B) AT THE ENTEROVIRUS RESEARCH CENTRE, MUMBAI : DEPUTY DIRECTOR (One Post) (Scale of pay Rs. 4500-150-5700) Essential Qualifications & Experience : (a) M.B B S or M.Sc 1st Class alongwith 12 years research/teaching experience in fields like Microbiology/Virology/Epidemiology/Biochemistry/Immunology/Molecular biology/Biotechnology OR 10 years research/teaching experience for candidates possessing M.D./Ph D degrees in relevant fields. (b) Original work as evidenced by scientific publications in standard journals **Desirable :** Research experience in the study of enteroviruses and ability to guide postgraduates for research and managerial ability. **Job Requirements :** To undertake research on different aspects of enteroviruses such as virological pathogenesis epidemiological, Immunological studies Besides, the incumbent will assist the Director in planning, executing and monitoring other activities of the Institute including administrative matters.

(C) AT THE REGIONAL MEDICAL RESEARCH CENTRE, DIBRUGARH: (i) ASSISTANT DIRECTOR (One Post) (Scale of pay of Rs. 3700-125-4700-150-5000), Qualifications & Experience : Essential : (a) M B B S. with 12 years experience in research/teaching (10 years research/teaching experience for candidates possessing M D.) (b) Original work as evidenced by publications in standard journals **Desirable:** Doctorate in Pathology/Microbiology & Related disciplines. **Job Requirement :** To assist the Director in the research programmes of the Centre.

(ii) **SENIOR RESEARCH OFFICER (One Post) (Scale of pay of Rs. 3000-100-3500-125-4500), Qualifications & Experience : Essential :** M.B.B.S or Ist class Masters Degree in Life Sciences with 6 years research/teaching experience. (For candidates possessing M D./Ph.D., 2 years research experience in the relevant field). **Desirable :** Experience in Biotechnology/Molecular Biology or M.D./Ph.D. in Microbiology. **Job Requirements :** To assist in research activities of the Centre related to communicable diseases of regional importance.

AGE : Below 50 years for the post of Director and Deputy Director and below 45 years for the post of Asstt. Director and Senior Research Officer. SC/ST/OBC candidates are allowed relaxation in accordance with Centre Govt. Rules in force. Benefits of pension is admissible. Private practice is not allowed but N.P.A. as per rules of the Council is admissible only to those with Medical/Veterinary degrees. Application forms and other information are obtainable from the **INDIAN COUNCIL OF MEDICAL RESEARCH (PERSONNEL SECTION), POST BOX NO. 4911, ANSARI NAGAR, NEW DELHI-110 029.** Forms duly completed should also be sent to the same address alongwith a crossed I.P.O. for Rs. 8/- payable to D.G., ICMR, New Delhi. (SC/ST candidates are exempted from this payment). Incomplete/late applications and those without postal orders will not be entertained. ANY CANVASSING BY OR ON BEHALF OF THE CANDIDATES OR BRINGING POLITICAL OR OTHER OUTSIDE INFLUENCE WITH REGARD TO SELECTION/RECRUITMENT SHALL BE A DISQUALIFICATION.

UNIVERSITY OF DELHI

FACULTY OF COMMERCE AND BUSINESS
DEPARTMENT OF COMMERCE
DELHI SCHOOL OF ECONOMICS

INVITES APPLICATIONS FOR ADMISSION to the third batch of the following two full-time two-year (four semesters) professional courses, beginning July, 1997.

(1) **Master of International Business (MIB)**
(2) **Master of Human Resource and Organisational Development (MHROD)**

Eligibility: Bachelor's degree in any discipline of the University of Delhi or an Examination recognised as equivalent thereto, with atleast 50 per cent marks in aggregate.

Reservation: Reservation for SC/ST candidates and for wards/widows of armed forces and para-military personnel killed or disabled in action, as per University rules.

Relaxation : 5 per cent marks for SC/ST candidates, and for widows, sons/daughters of officers and men of the armed forces including para-military personnel killed during war.

Those appearing in final year degree examination can also apply provided they fulfil the eligibility criterion at the time of admission.

Selection : The selection shall be made on merit determined on the basis of written test, group discussion and personal interview

Admission Test: The common admission test for MIB and MHROD will be held on Sunday, 11th May, 1997 at 2.00 p.m. at Calcutta, Chennai, Delhi, Lucknow and Mumbai. The Department reserves the right to change/cancel any test centre and will not be responsible for any postal delay.

Information Bulletin and application form can be obtained with effect from 24th February, 1997 from the Office of the Department of Commerce, Delhi School of Economics, University of Delhi, Delhi 110007, personally against a crossed bank draft of Rs.100, (Rs.120 through post) *drawn in favour of the Registrar, University of Delhi payable at the State Bank of India, Delhi University Branch (Code No 1067)*

The duly filled in admission application form should reach the Admission Coordinator, Department of Commerce, latest by **11th April, 1997.**

Professor R.N. Goyale
Head of the Department

ADMISSION NOTICE

Applications are invited for admission to the following courses conducted by the Central Institute of Fisheries Education at its headquarters at Mumbai and Regional Centres as under :-

Sr. No.	Name of the course & dt. of commencement	Educational Qualification	No of seats	Centre
1.	Two years Post-Graduate Diploma Course in Fisheries Sciences commencing from 01.07.1997. (D.F.Sc. Course will be discontinued from 1998 onwards & 1997-99 in the last batch).	B.Sc. with Zoology OR B.F.Sc & should have secured at least 50% marks in Zoology (45% marks) in case of SC/ST candidates or equivalent G.P.A. Preference will be given to the candidates sponsored by State Govt. Fisheries Corporations & Private Entrepreneurs.	Five	CIFE Mumbai
2.	One year Post-Graduate Certificate Course in Inland Fisheries Development & Administration commencing from 01.06.1997.	B.Sc. with Zoology or B.F.Sc.	Fifteen	IFTC, Barrackpore

Candidates are advised to send their applications on plain paper indicating their name in block letters, address, date of birth, caste, qualifications, percentage of marks secured together with attested copies of degree certificates and marks sheets. The applicants should clearly indicate on top of their application and also superscribe on the envelope the course which they have applied for. Applications with all required information and attested copies of certificates should reach the Senior Administrative Officer/Register, Central Institute of Fisheries Education, Kakori Camp, J.P.Road, Seven Banglows, Versova, Mumbai-400 061 on or before 30th April, 1997.

SANJAY GANDHI POST GRADUATE INSTITUTE OF MEDICAL SCIENCES

RAEBARELI ROAD, LUCKNOW - 226014
EPABX 440004-440008, 440700, 440800, 440900
FAX: 091-0522-440973

Advt.No. 80/96-97

FACULTY ADVERTISEMENT

Last Date 30.4.97

Applications are invited on prescribed form for the following **FACULTY POSITIONS.**

S.N.	Departments	Professor	Addl. Professor	Assoc. Professor	Asstt. Professor
1	Cardiology	1	—	1	2
2.	Surgical Endocrinology	1	—	—	1
3.	Medical Endocrinology	1	—	—	1
4.	Urology	—	—	1	1
5.	Nephrology	—	—	—	1
6.	Neurology	—	—	—	1
7.	Cardiovascular and Thoracic Surg	—	—	—	1
8.	Clin. Immunology (BMT Unit)	—	—	—	1
9.	Radiodiagnosis	—	—	—	2
10	Pathology	—	—	—	2
11	Transfusion Medicine	1	—	—	—
12.	Medical Biostatistics	1	—	—	1
13.	Radiotherapy	—	—	—	1
14.	Anaesthesiology	—	2	—	1
15	Nuclear Medicine	—	—	—	1

Applications are also invited for Ad-hoc appointment of Assistant Professors against leave vacancy in the following departments for a maximum period of six months or earlier.

1.	Neurology	1
2	Gastroenterology	1
3	Surg Gastroenterology	1

Essential Qualification and Experience for Ad-hoc appointments will be the same as regular appointments which are mentioned below

Essential Qualification and Experience : Medical candidates should possess a recognised Postgraduate and Post-Postgraduate Degree as prescribed in the schedule of MCI and have completed total of 14 years, 10 years, 6 years, and three years of teaching experience *after Postgraduate at a recognized teaching institution, for Professors,* Addl Professors, Associate Professors and Assistant Professors, respectively in subjects where Post-Postgraduate Qualification is not prescribed by MCI, three years Post-MD/MS experience in the superspeciality will be accepted in lieu of such qualifications for the post of Assistant Professors Prescribed duration of experience will be determined as per institute rules Total experience for higher positions shall also include experience at lower positions as required under MCI regulations

Desirable Qualifications and Experience :-

For S.No 1 : DM (Cardiology) candidates with experience in Paediatric Cardiology for one position will be preferred.

For S.No. 2 : MS in General Surgery with experience in Surgical Endocrinology

For S.No 3 DM (Endocrinology) with experience in Reproductive Endocrinology for Assistant Professors.

For S.No 4 MCh (Urology) candidate with experience/training in Paediatric Urology/Uro-Oncology/Andrology/Endourology/Laproscopic Urology will be preferred

For S.No. 5 and 6 : Three years of teaching experience after Postgraduation

For S.No. 7 : MCh (CVTS) candidate with experience/training in Thoracic Surgery/Vascular Surgery for exclusive Sub-specialization.

For S.No. 8 . MD (Medicine/Paediatrics) with three years Post-MD experience in Clinical Immunology with or without formal degree. Preference will be given to those who have direct experience in Bone Marrow Transplantation for exclusive subspecialization.

For S.No. 9 : MD (Radiodiagnosis) with three years Post-MD experience in the speciality. Preference will be given to those with experience in Gastro-Radiology/Vascular-Radiology.

For S.No. 10 : MD (Pathology) with three years Post-MD experience in (i) Renal Pathology with particular reference to EM and Immunohistochem (ii) Oncopathology with particular reference to molecular pathology.

For S.No. 11 : MD (Pathology or Allied Sciences) with experience in Transfusion Medicine

For S.No. 12 . PhD in Statistics/Biostatistics Preference will be given to those candidates with special interest in applications to Genetics *Multivariate analysis/Regression analysis/Clinical trials and with* knowledge of computing using SPSS/SAS/BMDP/GLIM/Neural Network.

For S. No. 13 MD Radiotherapy with three years Post-MD experience in the speciality

For S.No. 14 MD Anaesthesiology with experience in Cardiac-Anaesthesiology/Neuro-Anaesthesiology for exclusive subspecialization at Addl. Professor level one post each.

For S.No 15 : MD Nuclear Medicine or Allied Sciences or MNAMS/NBE Certificate in Nuclear Medicine with one year teaching/research experience. In addition the candidate should also have DRM and two years teaching/research experience in the speciality following DRM qualification.

Pay Scale :

Professors	:	**Rs. 5900-200-7300**	
Addl Professors	:	**Rs. 5100-150-6300**	**Plus NPA for**
Assoc. Professors	:	**Rs. 4100-125-5300**	**Medically Qualified**
Asstt. Professor	:	**Rs. 3500-125-4500**	**Candidates**

Upper Age Limit : 50 years as on July 1, 1997. Relaxable for Govt. Servants, Scheduled Caste/Scheduled Tribe/Backward class as per rules, and exceptionally qualified candidates.

Reservation : Reservation policy as per rules.

General Conditions Incomplete applications will not be considered and treated as rejected Persons in employment should send their applications through proper channel. Advance copy will be accepted but copy through proper channel/NOC must be received before the date of interview Exceptionally qualified candidates having meritorious academic records and specialized experience may be given advance increments on the recommendation of the selection committee. **In case of non availability of suitable person at higher level, the post may be filled at lower level. The number of posts indicated above is provisional and subject to change without prior notice. Selections may not be made for all the advertised posts. In case of non-availability of suitable candidates for the post of Professor for regular appointment, the Institute can consider appointment on contract for 3-5 years of superannuated persons upto the age of 65 years.** *Application form may be obtained from Executive Registrar of the Institute on payment of Rs. 200.00 through bankdraft in favour of Director, SGPGI Lucknow accompanied with a stamped (Rs.12 only) self-addressed envelope (size 10"x12").* For candidates from abroad biodata on plain paper can be submitted. Director reserves the right to reject any or all applications without assigning any reason.

DIRECTOR

Biotechnology Entrance Examination

Combined Entrance Examination for admission to M.Sc./M.Sc (Agri)/ M.VSc.(Animal)Biotech./M.Tech. Biotechnology 1997-98

On behalf of participating Universities, the Jawaharlal Nehru University will hold Combined Entrance Examination on 1st June, 1997 **(Sunday) for admission to M.Sc. Biotechnology, M.Sc. (Agri) Biotechnology/M.VSc. (Animal) Biotechnology** and M.Tech. Biotechnology at various participating Universities as per details given against each programme at the undermentioned Centres:

Ahmedabad, Amritsar, Bangalore, Baroda, Banasthali, Bhubaneshwar, Mumbai, Calcutta, Calicut, Chandigarh, Coimbatore, Dehradun, Delhi, Dharwar, Gauhati, Goa, Hyderabad, Indore, Jaipur, Jammu, Lucknow, Chennai, Madurai, Pant Nagar, Pondicherry, Danapur Cantt.(Bihar), Pune, Ranchi, Secunderabad, Shillong, Shimla, Thiruvananthapuram, Varanasi and Vijayawada (The University reserves the right to change the Centre (s) of examination without assigning any reason).

PROGRAMME OF STUDY :

1. **M.Sc. BIOTECHNOLOGY**: Candidates with Bachelor's degree under 10+2+3 pattern of education in Physical, Biological, Agricultural, Veterinary and Fishery Sciences, Pharmacy, Engineering, Technology or Medicine (MBBS) or B.D.S. with at least 55% marks are eligible to apply for M.Sc. Biotechnology at (1) Banaras Hindu University, Varanasi, (2) Banasthali Vidyapith, Rajasthan (3) Calicut University, Kerala, (4) Central University, Hyderabad, (5) Devi Ahilya Vishwavidyalaya, Indore (6) G.B. Pant University of Agricultural & Technology, Pant Nagar (7) Goa University, Goa (8) Guru Nanak Dev University, Amritsar (9) Himachal Pradesh University, Shimla, (10) Jawaharlal Nehru University, New Delhi, (11) M.S. University of Baroda, Baroda, (12) Madurai Kamaraj University, Madurai, (13) Panjab University, Chandigarh, (14) Pondicherry University, Pondicherry, (15) Poona University, Pune and (16) Punjabi University, Patiala.
2. **M.Sc.(AGRI)BIOTECHNOLOGY/MVSc.(ANIMAL)BIOTECHNOLOGY**: Candidates with Bachelor's degree under 10+2+3 pattern of education in Agriculture, Horticulture, Forestry, Fisheries, Veterinary Sciences or Agricultural Engineering and (only BVSc degree for Tamil Nadu Veterinary and Animal Sciences University, Chennai) with 70% marks or COPA of atleast 3 out of 4 or 7 out of 10 in the grading system in case of Tamil Nadu Agricultural University and Tamil Nadu Veterinary and Animal Science and 55% marks in case of G.B. Pant University of Agriculture and Technology are eligible to apply.
3. **M.TECH.BIOTECHNOLOGY**: Candidates possessing B.Tech. degree with minimum 60% marks or equivalent in Chemical Engineering, Biochemical Engineering, Leather Technology, and B.Pharma or Master's degree with minimum 60% marks or equivalent in Life Sciences, Botany, Zoology, Biochemistry, Microbiology and Genetics, are eligible to apply for M.Tech Biotechnology offered at Anna University, Chennai.

SCHOLARSHIP/FELLOWSHIP: Candidates selected for admission in participating Universities are generally eligible for scholarship at the rates indicated below:

M.Sc. Biotechnology Rs. 400/-, M.Sc.(Agri) Biotechnology Rs. 800/-, M.Tech. Biotechnology Rs.1800/- (Details for financial assistance/ scholarship for students in respect of Central University, Pondicherry, Punjabi University, Patiala and Tamil Nadu Veterinary and Animal Sciences University, Chennai may be had directly from concerned Universities).

RESERVATION : The reservation of seats for SC/ST and other categories is in accordance with the rules of the respective participating Universities. In the case of JNU 22½% of the seats are reserved for SC/ST candidates (15% for SC and 7½% for ST) and 3% for the Physically Handicapped candidates.

APPLICATION FORM ALONGWITH BROCHURE CAN BE HAD ON CASH PAYMENT OF RS. 30/- PER SET BY CALLING PERSONALLY ON ANY OF THE PARTICIPATING UNIVERSITIES AS GIVEN ABOVE.

BY POST: Those desirous of obtaining application form by post should address their request only to Assistant Registrar (CEEB), Jawaharlal Nehru University, New Delhi-110067 alongwith a Crossed Indian Postal Order for Rs. 50/- payable to JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI to cover the cost of one set of application form and Brochure with a self-addressed unstamped envelope of 28x20 cms size clearly indicating "Application form for MSc. BIOTECHNOLOGY OR M.Sc.(AGRI) BIOTECHNOLOGY/ M.VSc.(ANIMAL) BIOTECHNOLOGY or M.TECH BIOTECHNOLOGY.

ISSUE OF APPLICATION FORMS : From 8th March, 1997 to 18th April 1997. LAST DATE OF RECEIVING COMPLETED APPLICATION FORM : **21st April 1997.**

IMPORTANT NOTE :

PLEASE NOTE THAT THERE ARE SEPARATE APPLICATION FORMS FOR EACH PROGRAMME AND CANDIDATES ARE ADVISED TO APPLY SEPARATELY IN CASE THEY ARE DESIROUS OF APPEARING MORE THAN ONE PROGRAMME i.e. M.Sc. BIOTECHNOLOGY or M.Sc. AGRICULTURAL BIOTECHNOLOGY/M.VSc (ANIMAL) BIOTECHNOLOGY or M.TECH BIOTECHNOLOGY. COMPLETED APPLICATION FORMS ARE REQUIRED TO BE MAILED ONLY TO THE ASSISTANT REGISTRAR (CEEB), JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-110067 AND NOT TO OTHER PARTICIPATING UNIVERSITIES.

Candidates who are due to appear this year in the respective qualifying examination prescribed for eligibility for admission to particular programme are also eligible to sit in the Entrance Examination as per conditions laid down in the "INSTRUCTION BOOKLET" in this regard. However, in the event of selection, their admission shall be subject to their securing the prescribed percentage of marks in the qualifying examination and submission of all documents including final marks-sheets of the qualifying examination as per deadline prescribed by each university.

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF KERALA

No: PR.1/2151/10/97 **THIRUVANANTHAPURAM** **Dated 28.2.1997**

NOTIFICATION

Applications are invited from qualified candidates for appointment to the following posts :

Sl. No.	Name of Dept.	Name of Post	Scale of Pay	No. of Vacancy	Quota
1.	Commerce	Professor	Rs. 4500-7300	1	Ezhava
2.	–do–	Lecturer	Rs. 2200-4000	2	i) LC/AI ii) Open
3.	Education	Technical Assistant (Purely provisional, likely to be made permanent)	Rs. 2060-3200	1	Ezhava

Qualifications :

For posts (1) & (2) : As per University Regulations

For Post (3) :- **General** : I or II Class M.Sc degree with not less than 50% marks.

Technical Diploma in Video systems

Desirable · i) Ph.D in the concerned subject
- ii) Degree in Education
- iii) 2 years experience in Software production

Age (As on 1.1.1997) :

Post (1) : Not more than 50 years

Post (2) : Note more than 40 years

Post (3) Not more than 35 years

For all the three posts, usual relaxation to Backward Communities will be allowed. For posts (1) & (2), relaxation is allowed for those in teaching services of the University

Cost of Application Form :

Post (1) : Rs. 200/-

Posts (2) & (3) . Rs. 100/- each

Mode of Remittance :

By D.D. drawn on SBI/SBT/District Co-operative Bank, in favour of Finance Officer, University of Kerala, payable at Thiruvananthapuram OR by challan at the University Cash Counter. Candidates residing outside Kerala may send D.D. on any Nationalised Bank.

Requests for application form, along with D.D./challan towards cost of application form and further details can be had from the Section Officer, Forms Section, University of Kerala, Thiruvananthapuram-695 034

Completed applications in case of posts (1) & (2) should reach the Deputy Registrar (Administration-III), and for Post (3) the Deputy Registrar (Administration-I) University of Kerala, Thiruvananthapuram-695 034 **on or before 7.4.97**.

Prof. K.K. Ramachandran
REGISTRAR

JIWAJI UNIVERSITY,
GWALIOR

No. F/Dev/97/2184 **Dated :- 14.2.97**

Advertisement

Applications are invited for the following posts in the University Teaching Departments on the prescribed form obtainable by sending a self addressed stamped envelope of size 9"x4" alongwith a demand draft of Rs.100/- drawn in favour of the Registrar, Jiwaji University, Gwalior so as to reach **on or before 7.4.97** duly filled in, accompanied with a demand draft for Rs. 150/- (Rs. 25/- for SC/ST candidates) payable to the Registrar :-

Dean, College Development Council(G), Professors one each in Biochemistry(G), Biotechnology(G), Library & Information Science(G), Business Administration(G), Botany(SC) and Librarian(G) all in the scale of 4500-7300.

Readers: two in Business Administra-

NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Ministry of Human Resource Development of Govt. of India)

ITANAGAR

ADMISSION NOTICE

Applications in the prescribed form are invited for admission into M.Tech. courses for the session 97-98 (starting from Aug '97) for the AICTE approved courses of (1) **Environment Science & Engg. and (2) Information Technology**. The admission shall be made under different categories of (i) Full time students with institute scholarship under valid GATE/NET score and (ii) Graduate Engineers sponsored by their employers The candidates must have a minimum of 60% marks or equivalent in qualifying degree

Application forms and other details are available from Deputy Registrar (Acad) NERIST, Nirjuli-791109. Itanagar, Arunachal Pradesh by sending a self addressed and stamped (Rs 4 00) envelope of size 12cm x 28cm accompanied by a crossed bank draft of Rs. 100/- drawn in favour of Director, NERIST and payable at SBI, Nirjuli (9535-Code) Last date for receipt of request for application form is 18.4.97 by post and 25.4.97 in person. Last date for receipt of completed applications is 5.5.97. The shortlisted candidates may be called for an interview at their cost.

Two more courses are likely to be started in (1) **Energy Management, and (2) CAD/CAM.**

Deputy Registrar (Acad)

tion (one ST one G) and one in Botany(ST), one System Engineer(G), one Head Computer(G) and one Senior Scientific Officer USIC(G) all in the scale of 3700-5700.

Lecturers: three in Business Administration (one SC and two G), two each in Biotechnology (One OBC & one G), and Electronics (one ST & one G) and one each in Chemistry(SC), Mathematics(ST), Computer Science(OBC), Commerce(SC), Physics(ST), Economics(OBC) and Computer Programmer (SC) all in the scale of 2200-4000.

Technical Assistant Computer Science (ST) in the scale of 1640-2900.

The post which are underlined are temporary but likely to be made permanent.

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Deputy Registrar (Acad)

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Editor :
SUTINDER SINGH

Managing Ethical and Political Issues in Social Science Research

Laxmi Budhwar[*]
R.D. Pathak[**]

Introduction

It is quite probable that the ethical dilemmas in business research cannot be solved completely. However, the ethical behaviour of researchers is expected to improve through discussion and examination of projects which in hindsight have proved to cross the acceptable limits of ethical standards. The ethical dilemmas cannot be solved completely for several reasons not the least of which is the moral code of individuals, organisations, and national cultures which varies from case to case.

Baritz (1975) and Punch (1986) talking about the role of social scientists say that a social scientist not only has a fundamental right to investigate social phenomena, legal and illegal, but has a moral obligation to do so. Hence the task of a social scientist is nothing less than to 're-humanise industry'. This moral obligation to investigate and ensure means that when undesirable, criminal, and deviant behaviour is under investigation methods and tactics themselves have to be adapted to the individual circumstance.

Ethics and Politics

Before discussing the main ethical and political problems of social science research, it is important to understand the meaning of these two terms. Distinction between ethical and political is essentially the difference between the actions, methods and constraints generated and adhered to by the researcher (ethical) and the actions, methods and constraints forced onto the researcher and the project design by external influences (political).

Ethical is also defined as 'relating to morals' (*Webster's New Compact Format Dictionary, 1989*). Indeed morals and ethics are closely related and are seen as the basic code of decent behaviour of an individual. Homan (1991) distinguishing between morals and ethics, defines ethics 'as the science of morality and those who engage in it determine values for the regulation of human behaviour.'

Homan (1991) quotes a number of definitions that can be analysed to understand the meaning of ethics in a social context. These include: primarily concerned with the evaluation and justification of norms and standards of personal and interpersonal behaviour; the quality or standard of actual conduct; and, those distinctive attitudes which characterise the culture of a professional group. Ethics therefore relate to the moral standards employed by individuals or groups.

Political actions on the other hand could be an organisational

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process, or a particular set of ideas, principles, or commitments (*Concise Oxford Dictionary, 1995*). Politics creates the influencing environment for the research project or the researcher. This may come from the government, department, or sponsor of the research who have their own criteria for selecting appropriate projects for funding, or the political situation in an organisation, or community as a whole. Considering these statements it does not mean that an individual cannot act politically or that an organisation cannot act in an ethical manner. However, the problems of an ethical nature are more concerned with the ways and means by which research was carried out, whereas the political problems are known more to arise due to the external constraints placed on the research program.

Significance of Roles in Social Research

Mirvis and Seashore (1979) believe that ethical underpinning of research is based on the role beings taken by concerned players (researchers and subjects) and the ethical issues arise at the conjunction between these roles. Based on the roles theory, Mirvis and Seashore developed a model for organisational research, which proposes rules for the preparation and implementation of the study and attempts to solve the ethical issues that may arise. The model views the target organisation as a complex cultural environment in its own right. The actors within the organisation have developed, in some instances over many years, inter-personal relationships with multiple layers of interaction. In addition the research team is bringing into the organisation its own 'role system' which will be as complicated as the organisations's.

The various members of each role system have expectations of their related members and also of the members of the system(s). For example, the top management will have their expectations of the roles to be undertaken by their subordinates, as well as the researchers. The middle management will also have expectations of the roles they will play, the roles their superiors will play and also the roles of the researchers.

Mirvis and Seashore (1979) with the help of their model of interaction (of two systems) describe how to study and reduce the potential ethical problems which may arise in a study. The importance of the role theory is evident from their main argument that standard of ethics is reliant on the specific situation is question. This means that the same actions could be considered ethical in one situation, and unethical in the other. Therefore, the role theory has been designed to aid the management of a social research project and by highlighting the ethical choice decisions that will occur.

Barnes (1979), on the other hand defines roles within a social research situation. He identifies the players concerned with a particular project. He calls subjects as 'citizens', the researchers as 'scientists' and the funding body as the 'sponsor'. In addition to these obvious participants there are also the 'gatekeepers' who can be seen as facilitators of the project and they control access to the citizens. Barnes argues that the social inquiry or research project can be seen as a process of interaction and negotiation between these four parties. Each of these four parties have their own 'criteria for success' which determine how they act and react during the research project. This sets the context within which ethical behaviour takes place.

Therefore, ethics can be seen as the conduct of individuals (representing the four parties) during the development of the project and at each decision point that is reached. Based on the discussion so far, we now look at three projects which have raised ethical concerns. The main purpose of analysing these projects is to highlight the 'roles' issue involved and to look at the stages within the project where the ethical principles of those concerned have been questioned.

Project Camelot

Project Camelot highlights a problem of the political nature of research sponsorship. Like other landmark cases, Camelot emphasises the ethical points it makes in an extreme way. Its key principles of sponsorship and control are valid for all organisational and individual sponsored projects. It highlights, just how much will a social scientist sell his soul for?

In 1964 the American government through the Department of Defence, realised the importance to understand the propensity for civil insurgence in other countries. The government required details of how civil unrest would develop in an effort to make preparations for the social upheaval expected in a number of countries. The US army used the University of Washington's department of social research to develop the necessary programme for Latin America. When the scientists contacted researchers in Chile, the target country, the Chilean scientists informed their government. The concerned government was incensed enough to cancel many projects being carried out in that country.

Condemnation of Project Camelot is cited in Kimmel quoting Glazer (1972) who offered three points: for simply assuming that the US government had a legitimate role in dealing with social problems of other countries, for asserting that this country's foreign policy was a major factor in determining the site of research, and for implying that internal war was always the greatest threat to a population's well being.

However, this condemnation should be more concerned with the relationship of sponsor and the researchers. The Camelot project was structured by the army, for the army, who used the Washington University as a cover, defining strict terms of reference for a project which carried the credibility of the University and its scientists. The key issue is the ethical situation researchers can find themselves in, when the sponsor of a proposed programme is very powerful. The researchers may not have the ability to turn down a project, even if they deeply disagree with the project, as other work many be withheld, or the status of the institution may be unduly effected in the long term.

The Milgram Case

In the 1950s Stanley Milgram directed what has become a landmark case in the relationship between the scientist and the subject. In essence, Milgram advertised for participants for a laboratory experiment. The volunteers were briefed to play certain roles, and some were deceived into taking the roles that Milgram decided they should take. The experiment involved teachers and students. The students were briefed to pretend that they were receiving electric shocks and were told to give false answers. The teachers were told to give increased voltage electric shocks from 15 volts to 450 volts. The results were that the teachers had no problems with delivering pain, and whilst most would only go up to 300 volts, some went to the maximum punishment under the impression that the 'students' were really receiving the electric shocks.

The essence of the ethical complaints were in the deception of the participants who were misled throughout the experiment, and the potential psychological harm that could have been inflicted. Milgram defended his research and told that the participants were fully briefed and most subjects said that they were pleased to have taken part. The Milgram case is cited by both supporters and detractors for elements of ethical research. Supporters determine that it is the right of the scientist to search for the truth. However, this must be balanced by the rights of the society to be protected from unscrupulous scientists.

The Tea Room Trade

Between 1965 and 1968, Laud Humphreys conducted research for his Ph.D. thesis. Humphreys was a priest in Washington before his conversion to the cause of social research. This gave Humphreys unparalleled access to parts of society which fuelled his appetite to develop the study he conducted. The *Tea Room Trade* was the resultant book of the research. The purpose of the study was to investigate the actions of sexual deviants in the area of Washington city. By concentrating on homo-sexual activities in public places, Humphreys determined to profile the participants in socio-economic, intelligence and behavioural terms. The study also examined the structure and development of an identified sub-culture.

Due to the extreme personal nature of the activities coupled with the fact that these activities in public were criminal offence, the methodologies chosen by Humphreys bring into stark relief the ethical dilemmas social researchers may encounter. Humphreys decided that he needed to identify a number of locations to give a broad sample of the population making use of public places for sexual activities, but that the locations should be 'of a type' in order to give the research a degree of 'closure'. Choosing a number of public toilets located in public parks, Humphreys inveigled himself into a position as a 'watch queen' (a watch queen is a voyeur of the activities and an acceptable part of the culture). Gathering detailed observational data, Humphreys supplemented his recordings with personal descriptions of the participants complete with car registration details. Humphreys carried out covert detailed surveillance on the participants, and then managed their inclusion into a social health study in which he himself was also involved. Finally, Humphreys carried out personal interviews with his target cases under disguise of the health study having taken pains to change his appearance. Having gathered the data for the health study, the interviews for the sex study was extracted and provided.

This case brings into sharp focus the ethical problems of access, participants, consent use of data given freely for one study being made available for a different purpose and breaking the law in order to carry out the study. These issues are discussed later in the article.

Ethical Issues in Social Research

So far we have discussed how the roles played and controlled during research bring about ethical issues at the points where these roles coincide. The summary of the above discussed cases demonstrates some of these instances. Project Camelot shows the conjunction point between sponsor and research team, Milgram case highlights the controlled roles given to 'subjects' and Humphreys' study of deviant behaviour demonstrates the dual role of researcher as an undercover agent. With these bases we now present the specific ethical issues of access, covert methods, the principle of informed consent, the use of data and privacy and confidentiality.

Access

Access to the place of research comprises of various obstacles which must be overcome. Access for an overt study will inevitably involve the approval of funding from a sponsor. The sponsoring body may be an organisation which requires its own working practices to be researched or an interested body (for example, the ministry of industry looking at a specific industry sector). The ethical issues here are the lengths the researcher is prepared to go to secure the project. In the case of Project Camelot, some critics thought that the University of Washington was acting as a research prostitute by fronting for what in essence was an army investigation. However, the famous bank case (for details see *Mirvis and Seashore*, 1979) shows that the way the sponsoring organisation enforces the structure of the research can have negative effects on the research subjects. Access is also controlled within the social group by the 'gatekeepers'. For example, access to staff will be monitored by supervisors, and needs to be negotiated.

Bell (1996) offers an approach to this type of ethical dilemma. He feels it is very important that strict ethical standards are maintained at all times. If the researchers are using data derived from people they must know about it and must agree to it. If this stance is taken then the chance of being denied access increases drastically. Was Humphreys to have donned a badge 'social researcher at work' and carried his clip board and camera with him, it is probably fair to suggest that his data exercise would have been curtailed.

Mirvis and Seashore (1979) recommend an open approach to access and data collection with a structure of committees made up of volunteers. Open and covert methods will be further discussed. But from an access perspective in an organisation full disclosure may be desirable to get passed from the gatekeepers but may not bode well for the validity of the data. The key is that access will be negotiated (at different access points), with different role players each having varying levels of power.

Overt Versus Covert Research

The role taken by the researcher plays an important part in the success of the relationship with the subjects. Covert research increases the problems faced by all parties. Creating a fictitious cover story for the researcher places extra strain of maintaining a facade. In addition the ethical problem of the subject's right to privacy is brought sharply into focus. In an organisational situation, the covert activity could be seen as a management tool for spying on the work force. However, a researcher acting openly could be classed as a traitor.

However, there are social research situations which by nature mean that openness is not a possibility. These situations are when the subjects are involved with a highly personal or illegal activity. Humphreys certainly could not have taken his clip board into the toilets with him. In fact he left his tape recorder in his car and sneaked off at regular intervals to record the details of the observations he had carried out.

The advantage of a covert study is in the lower levels of 'contamination' that the researcher brings into the field of study. The nature of data collection in a social sense means that the activity being observed will be changed by the participants, often at a conscious level. Certainly shop floor workers behave and work differently when their boss is present and the researcher will often be seen as the managers' representative. Where the cooperation of the subjects is fully expected, there is no need to add the extra burden of acting *incognito* to the researcher. However, surely after sober reflection, the situation under analysis will determine whether the observations are carried out in a covert manner or not.

Barnes (1979) makes the point that it is not only the researcher who may act unethically in a covert operation, but there is the situation where the sponsoring organisation may wish its participation to remain unpublished. He goes on to say that it is normal that the sponsors complain about not being identified with a project rather than the other way round. As with project Camelot, although the scientists may be happy with the sponsoring relationship, it may be the subjects of the research may not wish the resulting data to be made available to the identified sponsors. There is the possibility that although the study is carried out in an open fashion the researcher does not gain the subjects' 'informed *consent*'. *Informed consent is a cornerstone* of ethical research.

Informed Consent

Homan (1991) defines *informed consent* as: "the essence of the principle of informed consent is that the subjects of research should be allowed to agree or refuse to participate in the light of comprehensive information concerning the nature and purpose of research". In 1981 informed consent for both medical and social research was given the force of federal law in the US *(Homan 1991: 69)* where there is a checklist of detailed information that must be imparted to the subject. It is clear from the list that the law was targeted at medical researchers and includes experimental techniques. Where violation of a subject's body is involved, this stance we believe is of great importance. Kimmel (1988) quotes the American Psychologists Association who in 1982 stated that informed consent is the procedure by which individuals choose whether or not to participate in an experiment after being presented with information that likely would affect their decision.'

Looking at this information, American scientists have a legal requirement to inform the subjects about all aspects of research in which they may be taking part, the potential outcomes of the research and the use to which the research will be put. In addition any other information concerning the project will morally have to be provided on request. In addition, the information has to be given and understood. This is probably outside the researcher's control. In this instance, social research on the habits of Indian citizens in crowds must be daunting. Should a cricket team ask for research into crowd behaviour then the researcher's potentially would have to inform may be over 100,000 spectators at each observation and answer any questions any one of the 100,000 had.

Some of the researchers in the field (see for example, *Homan, 1991; 1992; Kimmel, 1988; Punch, 1986; Sjoberg, 1967*) make the point about the 'dirty test tube' syndrome. The dirty test tube is the scenario where the subject after giving his consent following a frank and full briefing modifies his behaviour in line with what he believes the researcher wants to see. This is an outcome of informed consent.

Use of Data

The ethical problems of the use of data are twofold. Firstly, to whom does the researcher give an early view of the findings for correction and information, and then to what extent are the findings modified in light of the reaction. And secondly, who owns the data. Dealing with the second issue first, this would normally be considered at the negotiation stage of the research project. Where the researcher is employed at an institutions or for an agency commissioned to carry out the research, there is rarely a problem as the ownership and use of any data would be explicitly stated in the contracts of engagement. As far as the first problem is concerned, this must be a matter of prudent examination of the particular stake holders' interests and a firm line of ethical conscience on the part of the researcher. Research must be correct and impartial as far as possible. But one can't help wondering whether he who pays the piper may wish to call the tune.

Privacy and Confidentiality

Apart from the above discussed ethical issues, there are two other important ethical issues for the social science. These are privacy and confidentiality. Privacy can be defined as 'the claim of individuals, groups or institutions to determine for themselves when, how, and to what extent information about them is communicated to others' *(Westin, 1968 cited in Kimmel, 1988)*. The difference between privacy and confidentiality is that the former pertains to persons whereas the latter pertains to data and information.

These two issues of privacy and confidentiality are clearly highlighted in Humpherys' 'Tea-room trade' study. Humphreys exploited the trust which the 'tea-room traders' put into him when they let him play the role of 'watch queen' and openly talked about their private lives. He deceived them when he came to their home as a health service researcher and violated their rights of privacy. There is no question that the research findings are substantial and of superior value. However, the question is whether the unethical means Humphreys used justified the ends, a major academic contribution to the social science or in the words of Barnes (1979), 'do individuals have an absolute right to privacy, or is this right over-ridden by the needs of the search for knowledge?'

Development of Codes of Conduct

Over time the researcher has been helped with the development of ethical practices by the development of accepted norms of behaviour by the professional bodies. At times the researchers are also guided by the law. Social science methodologies have developed from the more traditional research areas of medicine and other natural sciences. So the ethical procedures adopted in medicine must be reasonable starting point.

Ethical behaviour in the medical world has been a cornerstone for the practitioners since the time of Hippocrates. The use of live 'guinea pigs' by the Nazis' during the rule of the 3rd Reich, and more recently testing of human reaction to cancer with the use of geriatric patients has increased the strength of both the law and codes of practice. The rule of the social scientist is left by and large to a number of associations who all treat the ethical dilemma with codes of practice. Some of the associations are more strict than others, for example, the British Psychological Association which recognizes that 'ideal practices are not always possible and accepting reasonable compromises on the part of the investigator', nevertheless gives a professional code which covers such as access to subjects, privacy, confidentiality and informed consent.

Conclusions

This article has been designed to deal with the real ethical and political issues by using case examples which demonstrate the problems faced by the researcher. The discussion has made clear the meaning of ethics and politics in relation to social research and demonstrated the key of concerns of access, covert methods, informed consent, use of data and privacy and confidentiality. These issue have also been demonstrated in practice by highlighting the problems encountered in Project Camelot, by Milgram and also Humphreys. Implicitly throughout the discussion has been the dilemma of the right of the individual to privacy versus the right or indeed the obligation of the social scientist to investigate and the society's right to know. There is clearly a balance to be striven for. Social scientists may believe that they have an obligation to investigate, but who gave them this obligation!

In comparison to developing nations, western developed nations accept more control. Policing in these nations is by 'consent' of the public and thus the police is an effort to apprehend offenders who perform illegal acts. Whether it is breaking the speed limit to catch motorists or dealing in drugs to catch the main dealers and importers. By and large this is accepted behaviour. The western public through its support has accepted investigative journalism. In the US, there is a constitutional right to free speech which is emulated in practice if not through statute provision in the UK. Nowhere is there evidence that social scientists have been granted explicitly or implicitly any of the scope described above to invade the public's private lives.

However, society will clearly be enhanced by understanding of its structure and behaviour. Therefore, we would suggest that the ethical standards will grow with the growth of social research. As researchers and sponsors try to push to the limits of acceptable behaviour, society will criticise and insist that the behaviour in future be modified. Kimmel (1988) has very rightly stated that Humphreys actions were acceptable up to the point of tracing the individuals for a follow up personal interview. Where it would prove to be impossible to study the behaviour openly then covert methods are essential. However, perhaps a guiding principle should be that data collected by covert methods should not be related to individuals except in the broadest terms. This then cannot be said to be invasion of individuals privacy.

The relationship between the sponsor and the researcher should be carefully examined to distance the research methodologies from the desired outcomes of the sponsor. The sponsor's rights as funding the research have to be balanced with the potential harm to the subjects by the researcher. This is a question of personal morality and thus cannot be regulated.

Access through the 'gatekeepers' is another problem area where the reasonable behaviour of the scientist is required. All negotiations are based on biased discussions between unequal partners. The scientist knows many of the implication of his research which he does not wish to divulge. For organisational studies, this is particularly true, especially, when investigating cost control and job security issues. Use of data is perhaps one of the simpler aspects. In covert operations, the data perhaps should be categorised to protect individual subjects This then lessens the impact of use of the data. However, in open studies the use of the data should be a key element at the negotiation stage.

Where should the line be drawn ? Who should draw the line?

Two unanswerable questions are of paramount importance. The line can only be drawn by the individual research teams who must be fully aware of the implications through a thorough understanding of the issues. Then, if they make a mistake and push the limits too far, perhaps, the world of social science moves forward one more small step to getting it more right than it was before.

References

Baritz, L (1975) The Servants of Power. In G. Esland (Ed.) *People and Work,* London: Holmes McDougall and The Open University Press.

Barnes, J. A. (1979) *Who Should Know What.* Cambridge: Cambridge University Press.

Bell, J. (1996) *Doing your Research Project: A Guide For First-Time Researchers in Education and Social Science.* London. The Open University Press.

Concise Oxford Dictionary (1995) London: New Orchard.

Gill, J. and Johnson, P. (1991) *Research Methods for Managers.* London: Paul Chapman Publishing.

Hakim, C. (1987) *Research Design.* London: Routledge.

Homan, R. (1992) The Ethics of Open Research. *British Journal of Sociology,* 43(3), 321-331.

________. (1991) *The Ethics of Social Research.* London Longman.

Humphreys, L. (1970) *Ten-room Trade.* London : Gerald Duckworth & Co Ltd.

Kimmel, A. J. (1988) *Ethics and Values in Applied Social Research.* London : Sage.

Mirvis, P. H. and Seashore, S. (1979) Being Ethical in Organizational Research. *American Psychologist,* September, 766-780.

Punch, M. (1986) *The Politics and Ethics of Fieldwork.* London: Sage.

Sjoberg, G (1967) *Ethics, Politics, and Social Research.* London: Routledge & Kegan Paul.

Webster's New Compact Format Dictionary (1989) New York: Simon and Schuster.

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Programmes	Admission Requirement
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MSc (Applied Geology, Applied Statistics & Informatics, Biotechnology, Chemistry Mathematics, Physics)	BA/BSc with 60% marks. Applicants to Applied Geology, Biotechnology, Chemistry must have Mathematics at 10+2 level.
MTech (Aerospace Engg., Biomedical Engg., Chemical Engg., Civil Engg. Computer Sc & Engg. Corrosion Sc & Engg., Geoexploration, Energy Systems Engg., Electrical Engg. Environmental Sc & Engg., Industrial Engg. & Operations Research, Mechanical Engg., Metallurgical Engg. & Materials Science, Reliability Engg., Systems & Control Engg.)	BE/BTech/BSc(Engg)/MSc with valid GATE score or 2 yrs work experience for sponsored candidates, or Equivalent examination from professional institutions with 60% marks, valid GATE score & 2 yrs work experience; MBBS Degree holders must clear MCI/AIIMS Entrance Test for admission to Biomedical Engg.
PhD (In all Science & Engg disciplines mentioned above, Economics, English, Philosophy, Psychology, Sociology, offered by H & SS Dept and Management disciplines offered by School of Management)	MTech/MPhil/MMS or BE/BTech/MSc with 60% marks/MA/MCom with 55% marks & a valid GATE score/CSIR/UGC/NBHM Fellowship / 2 yrs work experience for sponsored candidates.

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Teacher Education Curriculum in India
A Critique of its Evolution and Emerging Trends

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In Retrospect

The education of teachers is an integral part of the educational system, which in itself is closely linked with the social system of any country. Therefore, the content of teacher education needs to be in conformity with changing educational and social realities of a given society. In India, the past few decades have witnessed some sporadic attempts at modernisation of the curriculum of various teacher education programmes in order to attune it to the demands of the socio-politico realities. It would be in the fitness of things to trace the historical antecedents of the present teacher education curriculum to understand the base for the modifications that have been attempted.

The idea of formal teacher training, though originated out of an indigenous system called monitorial system, as a major breakthrough, the famous Wood Despatch gave tremendous impetus to the development of teacher education. Taking into consideration the importance of teacher training it recommended a plan adopted in Great Britain for easy adaptation in India and made very practical suggestions for the recruitment and training of teachers. It visualised a more logical and systematic extension of the monitorial system and recommended payment of stipends to pupil teachers who, after completion of the training in normal schools were to be given certificates and employed as school masters on salary basis.

The Hunter Commission (1882) recommended that an examination on the principles and practices of teaching be introduced which should be a condition of getting permanent employment as a teacher of secondary school. It was for the first time that the teaching of 'Principles of Teaching' along with other papers was recommended as a result of which pedagogical courses became more prominent. The Commission recommended as training of shorter duration for the graduates in comparison to others. Thus by the close of the 19th century some essential things in teacher training had been established, pedagogical courses had replaced general education, examination and certification had been introduced with an emphasis on practical aspects in teaching.

Sadler Commission (1919) also touched upon teacher education and made some very valuable recommendations. It pointed out the inadequacies of the training institutions and poor quality of the training provided by them. It expressed the view that the training programme should not only make the trainee a competent classroom teacher but also a good administrator. It also recommended that a Department of Education should be set up in each university with a Professor of Education as its Head. The department should collaborate with the departments of Experimental Psychology, Philosophy, History and Economics. It further emphasized the need for attaching a demonstration school to each training institution for trying out new methods of teaching, new combinations of school subjects or new plans of school organisation. It recommended introduction of 'education' as a subject at the graduation as well as postgraduation level. The recommendations of the Sadler Commission had a salutary effect on teacher training curricula and programmes in India.

After 1937, the Basic Education movement brought about an important change in school curriculum when the emphasis on bookish learning was replaced by education geared to meet the needs and demands of life. The syllabi for teacher training also changed considerably to enable teachers to play their role in the changing schools. The courses emphasized craft work and instruction relating to the methods of correlating school subjects to the main craft.

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Another milestone in the history of teacher training in India was the publication of Sargent report on 'Post war Educational Reconstruction' in 1944. It recommended that the teacher training course should essentially be practical in nature and specially related to the needs of the school. It also recommended provision of refresher courses and research facilities for the teachers.

After independence, the University Education Commission (1948) observed that there was no difference in the theory courses offered in various teacher training colleges but there were differences in the practices followed. The compulsory papers usually were Principles of Education, Methods of Teaching, History of Education, School Management and Hygiene. Educational Psychology as a separate paper had yet to gain a place in most universities. The scope for specialization was provided in two or three papers and practical work included demonstration and criticism lessons. The number of supervised lessons varied from 10 to 60. To improve the quality of teacher training, it suggested that the course must be a) flexible and adaptable to local circumstances, b) remodelled to give more weightage to practice teaching and assessment of students' performance.

One of the important events in the history of education during the first decade of independence was the Report of the Secondary Education Commission (1952-53) which lamented the poor quality of teaching in schools. It recommended one year of training for the prospective teachers holding a university degree. A trainee teacher should opt for two subjects under methods of teaching. Emphasising practical training it recommended that teacher education curriculum should include not only practice teaching involving observation, demonstration and criticism lessons but should also include construction and administration of scholastic test, organisation of supervised study and maintenance of cumulative records. It also recommended training in the organisation of co-curricular activities and refresher courses.

Another milestone in the development of teacher education curriculum was the report of the Education Commission (1964-66). The Commission observed that a sound programme of professional education for teachers was essential for the qualitative improvement in education for which it recommended (a) re-orientation of subject knowledge; (b) Integrated courses of general and professional education; (c) vitalizing professional studies and basing them on Indian conditions through the development of educational research; (d) Improved methods of teaching and evaluation which include self study and discussion and continuous internal assessment and sessional work; (e) developing special courses and programmes; and (f) reviewing the curricula and programmes at all levels of teacher education to meet the requirements of the national system of education.

Another pioneering effort aimed at modernising teacher education curriculum was the Teacher Education curriculum framework brought out by NCTE in 1978. The salient recommendations of this framework were (a) Teachers Education curriculum should be relevant to the personal and social needs of children and schools; (b) There should be flexibility within the framework of acceptable national goals and values; (c) Inter-disciplinary and integrated approaches should be adopted in teacher education; (d) Practice teaching and internship should occupy an important place; (e) Semester system should be introduced; and (f) Experiments, innovations and research should be encouraged for development. It also suggested structures of teacher education curriculum for various stages of education i.e. pre-school, primary, secondary, higher secondary stages and particularly teachers for 10+2 pattern. The framework defined the objectives of teacher education in very clear terms, laid stress on the need for working with the community, emphasised the socially useful productive work (SUPW) and defined the role and the functions of the teacher in the emerging Indian society. In functional terms the structure of teacher education curriculum was visualised under three major theoretical and practical areas (a) Pedagogical theory, (b) Working with the community, and (c) Content cum methodology of teaching school subjects and practice teaching.

The above described Teacher Education Curriculum framework was implemented with certain modifications in a few universities but the situation did not exhibit significant improvement. The National Policy of Education (NPE) (1986) and its Programme of Action made a strong case for improving the quality of teacher education because it was the pre requisite to improve the quality of school education. Hence a need was felt to have a fresh look at the NCTE curriculum framework of 1978 in the light of recommendations of the NPE (1986) and National Curriculum for Elementary and Secondary Education (1988). Later, in 1988 an expert group of NCTE deliberated upon various pertinent issues of teacher education curriculum and recommended organisation of the whole programme under three major components : (a) Foundation courses emphasising mainly the philosophical and sociological perspective and psychological bases of education at the stage concerned; (b) Stage relevant specialization; and (c) Practical/field work emphasising application of theory in classroom teaching and in other practical activities involving students, parents and community.

After an in depth study of the question of academic burden on students and unsatisfactory quality of learning, Yashpal Committee (1993) recommended that the process of curriculum framing and preparation of textbooks should be decentralised so as to increase teachers involvement in these tasks. It further noted that inadequate programme of teacher preparation leads to unsatisfactory quality of learning in school. Therefore, the B.Ed. programme should offer the possibility of specialisation in secondary or elementary or nursery education. The duration of the programme should either be one year after graduation or four years after higher secondary. The contents of the programme should be restructured to ensure its relevance to the changing needs of school education. The emphasis in these programmes should be on enabling the trainees to acquire the ability for self learning and independent thinking. The teacher education programme, being a professional course has to be rigorous, thorough and intensive programme. Therefore, B.Ed. degree courses by correspondence be derecognised. The continuing education of teacher must be institutionalised. Realising that the teacher education programmes are deficient to meet the educational and social demands, the NCTE has now decided to have a fresh look at the curriculum framework.

The discussion document on Curriculum Framework for Teachers Education (1996) prepared by NCTE for transforming the programme of teacher education for greater empowerment of the younger generation, seeks to enlarge the scope of the teacher education curriculum because of its interdisciplinary nature and recent researches in medical and life sciences which provide new avenues of knowledge relevant to education. Realising the country's need for different kinds of teachers to manage its educational programme, the general objectives, stage specific objectives and curriculum structure have been suggested for discussion. A broad curriculum framework has been spelt out for different stages of teachers education. The curriculum reflects the realities of the national life, strives to realize the interdisciplinary goal of education, attempts to establish a viable integration of theory and practice of education and provides varied educational experiences needed by a teacher in his work place. It is flexible enough to enable teachers and teacher educators to experiment with new ideas, and based upon the actual availability of resources (human and non human), attempts to ensure that preservice and inservice education of teachers are inseparable, sets achievable goals for various stages of teacher education and prepares teachers for meeting the needs of students in physical education. It has visualised a broad institutional function, implicit in the transaction of the curriculum and emerging profile of a teacher. The document has also focused on the curriculum of the teacher preparation for alternative system/approaches in education, preparation of teachers for students with special needs, preparation of teachers for physical education and education of teacher educators.

The discussion document does not propose a single curriculum pattern, but expects variety of pattern to emerge as an outcome of discussion.

Existing Teacher Education Scenario : A Critique

The curriculum for any programme of professional preparation has to be built on several considerations like requirements of and expectations from the profession, academic background and cognitive maturity of the prospective entrants to the profession, facilities available with the training institutions and availability of candidates with requisite qualifications. During the nineteenth century when primary teacher preparation programme was started in Normal schools, the entry qualification was just 'Primary Pass' but with the availability of candidates with higher qualifications in increasing numbers, it was raised to 'middle pass' and subsequently to matriculation level. The general education level of primary teachers has now been raised to higher secondary pass (+2). Likewise the general education level for a secondary teacher has been raised from 'Intermediate' to graduation level. Needless to say that any upward revision in the entry qualification of prospective entrants has to be accompanied by a corresponding upgradation of the content of professional education. The teacher education curriculum for the preparation of primary and secondary teachers has undergone several rounds of revision each leading to certain amount of enrichment and upgradation. However, the difference between the levels of entry qualification for the two levels of teacher preparation programmes has persisted. In fact, the teacher education curriculum for different levels of school education has been developed on the assumption that teachers with lower levels of general education are required to teach at lower level and teachers with higher general education are needed to teach at higher level of school education. But this assumption is now questioned in the light of experience of the developed countries where the academic and professional qualifications of primary and secondary teachers are almost identical. In countries like United States, Canada, Japan and Australia, the qualifications prescribed for admission to a primary or a secondary teacher education programme is higher secondary pass and the duration of the programme is also the same, i.e. four years. It may appear to be logical to have primary school teachers with lower general education qualification on the plea that they are called upon to transact a curriculum which is supposed to be not challenging enough. But for dealing with young children and for making them understand the concepts included in the curriculum people with sound academic base and cognitive maturity are required. However, teachers with higher academic qualifications are likely to feel frustrated if they are posted in primary schools, specially when they are granted the salary scales of primary school teachers rather than the scales to which they may be entitled on the strength of their academic qualifications.

The organisation of curriculum for both elementary and secondary teacher education is almost identical. The foundation courses include study of interrelationship between education and other sub-systems of the social system, child's process of development and learning, school organization, pupil evaluation, etc. The stage relevant specialisation includes pedagogy of different curricular areas for the teaching of which the prospective teachers receive training. The practicum and sessional work includes practical activities including projects and assignments related to foundation and pedagogy courses. The practice teaching component provides experience of teaching in schools. In most of the states the elementary teacher education curriculum is developed on the pattern of secondary teacher education curriculum. Apart from having identical curricular structure, the courses included in various components are also similar. However, the content of various courses at the secondary stage is pitched slightly at a higher level in terms of number of sub-units on the one hand and comprehensiveness and difficulty level on the other. A very conspicuous difference is in the number of teaching subjects a trainee has to offer. In the case of secondary teacher education, a trainee has to study pedagogy of one or two school subjects only, but in the case of elementary teacher education, a trainee is required to study methods of teaching of all primary school subjects. This difference is carried out to the practice teaching programme in schools i.e. the secondary teacher trainees undertake practice teaching in one or two subjects while elementary teacher trainees are required to teach all subjects included in the curriculum of primary schools. Thus, the elementary teacher education programme is perceived to be a lower level programme or a simple version of the secondary teacher education programme, specially in the case of foundation courses.

The question relating to the place of the content of school subjects in the teacher education curriculum has proved to be contentious. In the one year secondary teacher education programme, only 'methodology' of teaching is taught as the trainees have atleast passed degree level examination in the subjects concerned and it is assumed that they have adequate mastery over the subject content. On the other hand, it is pointed out that mere possession of a 'degree' does not ensure mastery and deep understanding of various concepts included in the curriculum. Besides, 'methods' have to be taught and practised in relation to the subject matter. In the case of elementary teacher education the controversy relating to content versus methodology has been sharper in view of the low general educational qualification of the prospective teachers. One of the reasons for increasing the duration of the programme from one year to two year has been the need to accommodate 'content' courses in the teacher education curriculum. Further, there has been a controversy with regard to the level or standard of content which should form part of teacher education curriculum. Should it be of the level of the grades which the trainees shall be required to teach after completion of the training or it should be beyond the general education level of the trainees. In other words, should the prospective primary teachers be taught primary level mathematics and science or of higher secondary level if they have studied these subjects at secondary level and of the degree level if they have already studied these subjects at the higher secondary level. However, in most of the states, the trainees are required to study again selected portions of the school curriculum. It is assumed that the study of school subjects alongwith their methodology of teaching, shall help the prospective teachers to gain insights essential for teaching those subjects to young children.

It has been observed that education curriculum, by and large, is not based on the systematically conducted analysis of the tasks a teacher has to perform. A major portion of the curriculum is based on the judgements of experts regarding what a teacher should know and practice. In a school, an average teacher is called upon to maintain records, handle various types of equipments, interact with parents to solicit their cooperation, mobilise community resources, develop low cost teaching materials, identify assignments and projects, undertake correction work, provide guidance to the needy students, organise co-curricular activities, sports and excursions, evaluate pupils' achievement and instructional materials. The present day curriculum lays more emphasis on theoretical aspects of education and equips the trainees inadequately to undertake the aforesaid tasks.

It is incumbent on the framers of teacher education curriculum to take due note of the demands of school curriculum. A teacher education curriculum is effective to the extent it prepares the prospective teacher to negotiate the school curriculum with confidence. Since a primary school teacher is expected to handle all curricular areas included in the curriculum, physical education, art and work experience activities have been made integral part of elementary teacher education curriculum. However, at the secondary stage the linkages between teacher education curriculum and school curriculum are rather inadequate. For instance, in most of the universities, a trainee has to offer two school subjects as his/her practice teaching subjects but he/she might not have studied both the subjects at the graduation level. This implies that some trainees are called upon to teach a subject for which they do not possess adequate background or competence. A teacher of social studies is expected to teach all the four components of this subjects, namely, history, geography, economics and civics without having studied himself or herself all the four subjects either at the graduation level or at the teacher training level. In the absence of synergic linkages among school curriculum, undergraduation curriculum and teacher education curriculum, teacher preparation remains inadequate. Since the higher education system is not geared to the demands of the school system or the teacher education system, it cannot be expected to change itself to meet the requirements of school curriculum. However, the teacher education curriculum must respond to the demands of school curriculum by introducing content alongwith 'pedagogy' courses, specially the courses the trainees would be required to teach without having studied themselves at the graduation level.

The question of duration of the teacher education programme has engaged the attention of educationists right from the times when the system started envolving. The discourse on the programme duration has centered around the place and relative importance of content and methodology courses. In the context of secondary teacher education, the controversy has narrowed down to the continuation of the existing model of one year training after graduation or its replacement by a four year integrated programme after higher secondary or offering both the programmes providing flexibility to the students to opt for teaching profession after passing higher secondary examination or after completing graduation. The advantage of integrated programme lies in the possibility of ensuring compatibility between teacher education curricular provisions and school curriculum demands. The weaknesses of traditional one year programme can be remedied to a large extent with the adoption of four year integrated programme combining the study of content and methodology. A longer duration of teacher preparation programme shall go a long way to earn the status of 'profession' for teaching.

Innovations in Teacher Education

During the post independence period, some innovative programmes have been launched at different places in the country. With a view to attract bright students to teaching profession and to ensure integration of content and methodology, a four year programme leading to B. Ed. degree was started by Kurukshetra University during late nineteen fifties.

The duration of the courses was four years for the students with higher Secondary (11 years schooling) and five years for matriculates. All the students admitted to the programme were granted scholarships which were progressively reduced in number. The curriculum was a combination of the curriculum of undergraduate courses in science or humanities and curriculum of the one year B.Ed. programme, The experiment was conducted successfully for a number of years but was ultimately discontinued as its institutionalisation in place of the traditional one year programme was found to be difficult.

The four year integrated programme was also introduced during nineteen sixties in the four Regional Colleges of Education of NCERT at Ajmer, Bhopal, Bhubaneshwar and Mysore. The programme is still continuing but during the thirty years of its existence, the scheme of studies has been modified several times. The curriculum is designed in such a way that it develops subject based competencies of graduation level alongwith competencies related to methodology of teaching. To begin with, a composite degree of B.Sc. B.Ed. was awarded to the candidates on the successful completion of the course but subsequently it was decided to award the degree of B.Sc. on the completion of three years to enable the students to join postgraduate programmes in various science disciplines. However, it was soon found out that the facility resulted in exodus of several students at the end of three years. As this defeats the purpose of the programme, the decision has again been reversed and the system of awarding one composite degree at the end of this entire course has been reintroduced. A number of studies conducted to ascertain effectiveness of the programme have revealed that its products are much better than the products of traditional one year programme. The difference in effectiveness is attributed to several factors which include 'selection of meritorious students' prolonged duration, integrated curriculum allowing simultaneous teaching of content and methods of teaching'. Unfortunately, the experiment having the potential of professionalising the teaching profession, has not crossed the confines of the four Regional Colleges of Education in spite of unambiguous support from several Commissions and Committees. Chattopadhya Commission (1985) recommendation that at least one four year integrated college of education should be established in each state has not been implemented in any of the states.

The B.Ed. programme offered by different universities is meant for preparing teachers for secondary stage of education. The same qualification is prescribed for teachers of senior secondary stage in most of states. Most of the private schools also prefer teachers with B.Ed. qualification for primary classes. This implies that the same teacher education programme is considered equally relevant and useful for different sub-stages of school education. Realising the inadequacies of a common programme for different sectors of education, Prof. Yash Pal Committee (1993) recommended : The B.Ed. Programme should offer the possibility to specialisation in Secondary or Elementary or Nursery education. The duration of the programme should either be one year after graduation or three-four years after higher secondary. It is indeed heartening to note that Delhi University has recently introduced a new four year programme titled, B.Ed. (Elementary) in three colleges in order to prepare quality teachers for primary stage of education. The entry qualification is senior secondary (+2) pass and the curriculum is a blend of content and pedagogy courses.

The need for having a suitable teacher education programme for senior secondary stage has been felt since the introduction of 10+2+3 pattern. When the intermediate stage (+2) formed part of undergraduate education, no formal teacher training was prescribed for the teachers of this stage as it was thought that a person with a postgraduate degree could teach his subject with confidence. It was believed that at this stage, the mastery over the content was more important than the knowledge of methodology. With the transfer of this stage of education to the school sector, the question of prescribing teacher education qualification as an essential qualification for senior secondary teachers has assumed importance. Generally, persons possessing postgraduate degree with B.Ed. are appointed as senior secondary teachers. NCERT had been running a two year M.Sc.Ed. programme in mathematics, physics, chemistry and life sciences in its Regional Colleges of Education and one of the objectives of this course was to prepare teachers for the +2 stage. The programme had been developed on the premise that pedagogy of a subject should form an integral part of its content. Therefore, the curriculum includes all those courses which are generally offered in master level programmes in these disciplines in different universities in addition to courses in their pedagogy.

Emphasis on 'Education for All' has highlighted the need for bringing all segments of the society under the umbrella of compulsory primary education. In the case of children with disabilities, the focus has shifted from the concept of exclusive schooling to inclusive schooling which means that children with disabilities should be taught in a common school alongwith normal children. This has thrown up the need for building a cadre of teachers who could handle disabled children in integrated settings. A number of universities have responded to this need of the school system by introducing B.Ed. (Special Education). As an illustration, the curriculum of this programme in the Jamia Millia Islamia, a central university, is reproduced below. There are six theory papers along with practice teaching and practical work :

Theory Papers

Paper-I: Education of Disabled in Emerging Indian Society
Paper-II: Educational Psychology and Disabled Children
Paper-III: Nature and Need of Disabled in Modern India.
Paper-IV:(a): Assessment, Guidance and Counselling
(b): Curriculum Development
Paper-V: Teaching Strategies
Paper-VI: Implication of Disabilities and Teaching Strategies

Practice Teaching

1. Practice teaching in two school subjects (40 lessons)
2. Resource room teaching
3. Discussion lessons
4. Achievement tests
5. Individualised education programme

Practical Work

1. Orientation and mobility
2. Braille
3. Use of special equipment
4. Aids and Scrap book
5. Case studies and diagnosis
6. Visit to the special schools.

Emerging Trends in Teacher Education Curriculum

During the past few decades, the teacher education curriculum has responded to emerging concerns of school curriculum on the one hand and to those of the society on the other but the pace of change has rather been slow. However, the following trends of curriculum change have become quite discernible.

In the context of teacher education, the most important change that has occurred during the past fifty years or so is in the perceptions and attitudes of people. The question whether teachers are born or made is no longer a subject of debate. Everyone appears to have realised that the sheer numbers of teachers required to meet the demands of tremendous expansion in school education has made it *imperative to institute some kind of teacher preparation programme* for all stages of school education. Realising the importance of pre-service teacher training, the education departments of almost all the states have prescribed diploma or degree in education as an essential qualification for the recruitment of teachers. The successive five years plans highlighted the need to clear the backlog of untrained teachers by providing them some sort of in-service training. The distance education programmes addressed to the experienced but untrained teachers have been launched by various universities.

The teacher education system in the country is generally equated with the all pervasive and multi-purpose B.Ed. programme. The same programme is considered to be appropriate for the preparation of teachers of secondary stage, senior secondary stage, school supervisors, educational administrators, and elementary teacher educators. Since the teachers, supervisors, administrators and teacher educators have to undertake different tasks, the same curriculum will not be appropriate for their preparation. This calls for the introduction of specialised courses developed on the basis of task analysis of various jobs. To prepare better qualified teachers for the *Early Childhood and Elementary Sectors of education*, many universities have introduced B.Ed. programme with specialization in nursery and elementary education. Jamia Millia Islamia, introduced one year B.Ed. (Nursery Education) in 1996 while University of Delhi has introduced 4 years' integrated B.Ed. (elementary) with effect from 1995. Guru Nanak Dev University, Amritsar has been conducting B.Ed. (Nursery and Elementary Education) for the past several years. To prepare teacher educators and administrators and supervisors for elementary sector of education, Regional Institutes of Education of NCERT have introduced M.Ed. with specialization in Educational Planning and Administration, Jamia Millia Islamia introduced two-year M.A. in educational planning and administration. A number of universities have started B.Ed. (special education) to prepare teachers for children with disabilities.

The question relating to the level of general education required for a secondary school teacher was decided long ago. A well established one year programme after first degree in science or humanities, leads to first degree in education. Earlier the degree awarded was Bachelor of Teaching (BT), which has now been replaced by Bachelor of Education (B.Ed.) But the entry qualification and duration of the primary teacher education programme has witnessed several upward revisions. The programme started with 'Primary pass' as the entry qualification which was later on raised to 'Middle Pass'. In the early years of independence, the entry qualification was matriculation/high school and the duration of the training courses was one year. Subsequently, the duration of the programme was raised to two years. With the introduction of 10+2+3 pattern, some states raised the entry qualification to 'higher secondary (+2) pass'. However two year elementary teacher education programme became a national norm with the establishment of District Institutes of Education and Training (DIETs) which offer a two year diploma course in elementary education. The NCERT developed suggestive curriculum and syllabus guidelines for two year elementary teacher education programme in 1990. A few universities have introduced degree programme in elementary teacher education with first degree in science or humanities as the entry qualification.

To conclude, the existing teacher education curriculum is not adequate to meet the challenges of the present times, much less the demands of the future. As we are approaching 21st century, the phenomena of globalization and explosion of scientific and technological knowledge should impinge upon school curriculum necessitating life-long learning leading to human empowerment. This also implies that the teacher education curriculum shall have to be responsive to the changing demands of school curriculum. To make the teacher professionally empowerment and accountable, the teacher education curriculum shall have to be given a new orientation.

References

Arora, G.L. (1995), *Child Centered Education for Learning Without Burden*, Krishna Publishing Company, Gurgaon, Haryana.

. (1993), Teacher Education Curriculum — Emerging Trends. In R.P. Singh (Ed); *The Challenges of Tomorrow: A Profile of Future Teacher Education*, Sterling Publishers, New Delhi.

Secondary Education Commission Report (1952-53), New Delhi, Govt. of India, Ministry of Education.

Education and National Development: Report of the Education Commission (1964-66), New Delhi, Govt of India, Ministry of Education.

The Teacher and Society, Report of the National Commission on Teachers-I (1983-85), New Delhi, Govt. of India.

National Policy on Education (1986) New Delhi, Govt of India, Ministry of Human Resource Development, Department of Education.

Learning Without Burden, Report of the National Advisory Committee (1993), Govt of India, MHRD.

Mukerji, S.N. (ed). (1968), *Education of Teachers in India, Vol. I*, S. Chand and Co. New Delhi.

NCERT (1991), *Elementary Teacher Education Curriculum — Guidelines and Syllabi*, New Delhi.

———. (1991), *Secondary Teacher Education Curriculum — Guidlines and Syllabi, New Delhi*

NCTE (1978), *Teacher Education Curriculum — A Framework*, National Council of Educational Research and Training, New Delhi.

———. (1996), *Curriculum Framework For Teacher Education Discussion Document*, National Council For Teacher Education, New Delhi.

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Gandhian Thoughts in the Educational Perspective

Dr. A.T. Ariyaratne, President, Sarvodaya Shramadana Movement, delivered the convocation address at the Seventeenth Convocation of the Gandhigram Rural Institute, Deemed University Gandhigram. He said, "Higher education needs to be grounded on virtue. That means, you should widen the horizons of knowledge by widening the noble qualities of your heart at the same time. This qualitative assessment of education was what great Gandhiji too valued. Excerpts

Among the multifarious experiments with which Gandhiji was occupied all his life, those in education were placed at the higher level of importance. The Phoenix Settlement Gandhiji founded in Natal in 1904 and the Tolstoy Farm just outside Johannesberg in 1910 were his initial experiments in education. Subsequently, after he returned to India, from 1915 to 1930, his laboratory for his experiments in education was the Satyagraha Ashram on the banks of the Sabarmati river. Then followed Wardha, the Gujarat Vidyapeeth and others. It is my belief that Gandhian Rural Institute is a continuation of Gandhiji's concepts and experiments in education.

Learning and Education

Learning is a process that is continuously taking place in all living beings. Learning in human beings surpass that of all others because of their advanced brain or the thinking apparatus. The impact that the kind of learning of one human being can make on all other human beings, all living beings and nature is such that it can bring about positive benefits or disastrous consequences. This is why, from the beginnings of civilised life, great thinkers, statesmen, teachers and social reformers paid a very high attention to education. Education, in essence, is the over-all manner in which the learning process are guided in directions that a society at a particular time thinks most appropriate for the good of the society. The values, the objectives, the institutions, the contents and the methodologies of education, therefore, can undergo changes from time to time according to the dominant decision-makers of that particular society.

When Gandhiji returned to India, the kind of the education that was imposed on the people of India at that time by the colonial powers was such that he had no alternative but to experiment and design an educational system that fitted the national ethos and served the cause of Swaraj — a Free India, and a Sarvodaya Society. According to my understanding, he believed that these two objectives could be achieved by integrating into the educational process the following ingredients: A vision of Freedom, Truth and Non-violence; Equal Respect and opportunities for all citizens and peoples irrespective of their religious, racial, linguistic, gender and other differences; Equal importance to socially useful and productive intellectual as well as manual work; Mother-tongue to be the medium of instruction at all levels with compulsory teaching of Hindi; the content of teaching curricula and other arrangements to be aimed at serving the needs of the village population which comprised the majority of the people of India.

Gandhiji's experiments were carried out during the pre-Independence period. We have now reached the fiftieth year after Independence. So this is an appropriate time for us to assess the successes and failures in education during the post-Gandhian Era and arrive at a consensus on the future directions in education that will guide us to the twenty-first century. Our vision for the future need not be conditioned by our national interests alone. It should extend to the human society as a whole. Human problems have taken a global proportion and therefore the solutions we look for also should have a global perspective.

From Complexity to Simplicity

We are living in a very complex world. Sometimes I believe that these complexities have unnecessarily complicated our lives. When we cannot overcome and control these complications, we get so confused that we lose track of the essence of our human life. We look for a consumerist lifestyle, which is the most dominant and advertised way to live in modern society. We get caught in this glamour and insatiable desires and get totally lost. Most of us are, by nature, simple people. Our problems, therefore, are simple problems. Simple problems need simple solutions. Mahatma Gandhi was a symbol of simplicity.

When I refer to simplicity as a concept that I value in the great

Mahatma you would wonder what this idea has got to do with higher education. Gandhiji valued simplicity because it brought him nearer to the truth. He practised it by wearing a simple dress and eating simple food and associating with simple people. This simplicity enabled him to think deeply. Very few people realise how deep into life you delve when you are small and simple.

The Buddha called simplicity a way of life. When you are free and simple you have few things to hold on to. This holding, this grasping — Tanha — is the cause of all our sufferings. You minimise its impact by being simple, and your inner life becomes tranquil. For higher education there is nothing so gainful as a simple way of living. I am reminded of Timon of Athens in a Shakespearean play, who found a satisfying life by being a simple man in a solitary place. As the ruler of Athens, he could not find that happiness.

In this age where conspicuous consumption is the admired pattern of life, even in many seats of higher learning, simplicity as a way of life has lost its influence. The Mahatma taught it to us not only by advocating it, but also by *practising simplicity in his day-*to-day life. His life was dedicated to simplicity.

When you are simple in your *life* philosophy, the language you use is pleasant. You do not intend to harm others in your talk. Simplicity enables you and motivates you to share whatever you have with others who are in need. If something tends to go against your welfare or that of others you do not do it. With a simple philosophy of life there is no difference between you and other human beings. Simplicity as a philosophy is what great Gandhi practised. It is the essence that you can learn from higher education.

The Great Wonder

The Buddha speaks of three wonders. The wonder of the mystic, the wonder of manifestation and, the most important of all, the wonder of education. The first two are often feared or abhorred. The third one means complete change in you, giving your strength to lessen your grasp on things and be of service to yourself and others.

You are all fortunate in having that great wonder for your benefit. This education, in a seat of learning such as the Gandhigram Rural Institute, should accomplish that wonder of changing you completely. You should be different people from what you were when you entered the portals of this Institute. In this change, as Gandhiji often reiterated, the cultivation of love for humanity and, going even beyond that, love for all living beings, is the first step in your great transformation.

This love should flow on to the world from the innermost recesses *of your heart — it should be like the love a mother possess*es towards her only child. Could you achieve this ideal by the process of your higher education? The nearer you are to the ideal the closer you are to your own God, *Brahma*, Ram, *Nirvana* or truth.

When Gandhiji proclaimed *Ahimsa* or non-violence and urged all of us not to think of violence, the basis in all this was love for all beings. The Buddha, another great son of your country, respected by us very much in Sri Lanka, spoke of extending your love to *all living beings*. Today people speak of human rights in the west. But they forget that Buddha, Gandhiji and other great Indians went beyond that : for them higher learning is transformation of your inner being immersed in a love that embraces not only human beings, but also animals.

The great King Ashoka, in your country, extended protection to animals, birds and fish, and even established hospitals for animals in addition to those established for human beings. Human beings, as well as animals, could live anywhere in the country without fear.

Compassion at the Heart of Education

The Ahimsa philosophy of Gandhiji results in developing compassion for all beings; then your actions are dictated by this compassion. Your heart becomes nobler and what you learn makes you realise that the provision of services to all, without injuring any living being as far as practically possible, is your goal. If this had been practised in higher education and research, man would not have discovered devastating weapons that cripple and kill men. *In 1945, the atom bomb dropped on Hiroshima killed* nearly 200,000 people. This was a bomb which had a destructive force of 12.5 kilotons. They say, today they have bombs which have more than 200 kilotons of power.

Is education or knowledge dedicated to destroy man? You should question the meaning of your life here. In the Indian system, you spend the time you learn with your teachers. The knowledge you gain is coupled with character formation. I believe that wisdom, which is the real essence of education, comes from binding knowledge with virtues. Education or higher education without virtue and spiritual content in it is meaningless. If we had a system where wisdom was given instead of mere knowledge, our scientists would not have come out with such devastating weapons to create so much of misery and unhappiness in life. Higher education needs to be grounded on virtue. That means, you should *widen the horizons of knowledge* by widening the noble qualities of *your heart at the same time.* This qualitative assessment of education was what great Gandhiji too valued.

Wisdom is the Key to Happiness

Higher education should help us not only to bring out great scientists, a great philosophy, or great professionals, but also to create great men and women in all of us. They should be able to use their wisdom and make life better and happier for all of us. The concern for others must serve as the basis of higher education. When Gandhiji talked of serving God, in another way, he was speaking of serving all of us — God's children. The higher education *that you imbibe today* should motivate you to serve all human beings.

It is the absence of this spirit of service that has made most of us selfish and has turned us towards corruption. In every aspect of life, whether in our country or outside, in politics, in international dealings, in economics, corruption has set in. This is due to a faulty system of education which has inculcated a wrong value system in us. Instead of being simple and sharing our resources with others, we plan to live ostentatious lives imitating others and usurping other people's resources *to create great disparity* between the rich and the poor. This is mainly due to the way of living practised by us.

Training for a vocation or learning skills profitable in securing a job is *not the aim of education.* Unfortunately, in today's world of intensive competition, such is the deluded view of many. It is not difficult to bring out men and women with certain skills, but to bring out individuals with developed personalities is not easy. Institutions devoted to higher education attempt to transform your exterior being. In the flower of your youth you gained admission here and, now, rich in experience and wisdom, you march out *as a totally transformed human* being.

I may be asked a simple question here. Why do I advocate education and change for the better, *when all over the world,* education is used in order to increase wealth? You learn to acquire wealth, you become a doctor after undergoing great hardships and you try to earn all what you have lost and much more when you practise your profession. You thus *become a businessman and strive* to make money and nothing more. You become a politician and engage in corruption to earn wealth. You use your powerful position to gratify your senses. Is all this wrong? If so, why?

Such activities are normally wrong because you are, in principle, utilising resources which should go to other people without any resources. Thereby you widen the disparity between the haves and the have-nots. This will lead to a great devastation in the future, leading to your own downfall. You have acquired wisdom, the spiritual power that enables you to face life confidently. When you become selfish and attempt *to increase your wealth,* you create grave social problems — crime, poverty, etc. That would ultimately be your own undoing. You create a monster *who ultimately ends up devouring* you.

Higher education or education that you receive here is not a commodity to be marketed. It is a distinctive mark of the change in your personality to say that you have acquired wisdom. In this institution you have studied a variety of subjects and acquired knowledge. At the same time, by coming into contact with your teachers, by reading books and through experience, you have transformed your personality and acquired a spiritual power which Gandhiji would be proud of. It is this spiritual power that renders the knowledge gained by you into wisdom. In whatever field you work in the future, as long as this power prevails, you will never become a selfish, unsacrificing, bigotted human being.

Just imagine what tolerance education could give you. You learn about different religions, philosophies, sciences, etc. By inner concentration, you understand how each of these ideologies is correct in some way and wrong in another. In order to get the correct understanding, you should view all of these with compassion and sympathy. Your higher education should give you a heart great enough to see all these ideologies with understanding and sympathy. It is then that you are ready to learn the meaning of the term tolerance.

Tolerance is not being apathetic, but an active state of the mind where you understand others with sympathy and love.

Sharpen your Character with Patience

Tolerance teaches you to be patient even with ignorance. Ignorance ignites pride and prejudice and leads to hatred. Patience inspires humility and deepens understanding. Your heart narrows with ignorance, but widens with patience. This is why it is said: "Learn to be patient and you have gained the fruits of your education." The world needs such tolerance to transform this habitat we live in into a happy place. Oneness of the world could be achieved through patience. It is then that in families, in communities, in the world society, we could establish tolerance.

For me, the meaning of higher education is not complete if I do not speak about what it could do to your own life. Very soon you will realise, particularly the young people who enter the world after completing your degrees, that the world is full of problems. You will not be able to find solutions to most of your problems. Your education will help you cultivate a strong and understanding frame of mind to face such problems, for you realise that such problems are not peculiar to you. You will learn to be patient and understand problems.

Patience is the key word here. In this long journey you all have to go on, starting from today, I wish to give you a present carved in bold letters — PATIENCE — which is a weapon which the great Mahatma used in his non-violent struggles against injustice and imperialism throughout his life. Patience strengthened his character and gave him time to understand others. Even in religion patience is extolled, and I am sure one's guardian deities, as well as the natural law of the world, will be on the side of the persons who espouse patience.

You may be wondering why I spent so much of the time given to me to stress the importance of your personality awakening. After all, the challenges we have to face today are of an unprecedented nature and proportions. Unless we have very strong personalities and develop deep insights we cannot even grasp the interrelated nature of problems and their enormity. As I mentioned at the beginning of this lecture, we can easily get confused, lost and disheartened. Then we will have no alternative but to conform and coalesce with the dominant forces that are driving us in a violent, untruthful and selfish direction at the end of which the entire human species will perish.

On the contrary, with a clear vision, moral character and patience, we can work towards the alternative society that Gandhiji visualised, and named *Sarvodaya*. In Sri Lanka I am one among *thousands of Sarvodaya workers* who believe that this could be done if we are prepared to make sacrifices and suffer willingly for that cause. We should remember that education is for life. It is a process that takes place through life and throughout life. Please go to our sisters and brothers in the village and share your knowledge and awaken the wisdom in them. Help build self-reliance in them and make community participation for self-development and village self-government an attainable reality for them.

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No request for prospectus by post shall be entertained after **10 May, 1997.**

Last date for receipt of applications is 20 May, 1997.

Dated : 14 March, 1997 **Prof. M.P. Singh, Dean**

Industry-Institute Partnership

Ms. Teresa Bhattacharya, Chairperson and Managing Director of NGEF, Bangalore, said that industrial and educational institutions should join hands in identifying areas of research and training so that the country could meet the challenges in the field of technology. She was inaugurating a two-day national workshop on "Industry-Institute Partnership", jointly organised by the Sri Jayachamarajendra College of Engineering (SJCE) and the Confederation of Indian Industry in Mysore recently.

Ms. Bhattacharya said academic institutions would have to acquire greater flexibility and develop a quicker response to the rapidly changing needs of industry. This called for updating the curriculum and giving more practical training to students. The industry and institutions should interact so that students were not trained exclusively in a particular area, thus narrowing down the curriculum to suit the needs of a particular industrial sector.

Ms. Bhattacharya said with the liberalisation of the economy and the entry of multinationals, efforts needed to be channelised to meet international standards and this warranted support for research. Educational and research institutions should take up studies and research for the benefit of Indian industries. "It is true that we are not able to match the research and development budget of multinational companies. But a strong interaction between our industries and educational institutions can resolve this issue," she said adding that earlier, protected industries in the country had only minimal interaction with a few academic institutions.

Topics such as environment and ecology, with special reference to pollution control, could be taken up, so that the exorbitant cost of setting up effluent treatment plants with foreign collaboration could be brought down. Hitherto, Indian industries were availing of limited consultancy services from established academic centres.

Prof. M.H. Dhananjaya, Director (Technical), JSS Mahavidya Peeta, Mysore, expressed the need for adopting an education funding system which would help minimise the expenditure on higher education. Providing funds for higher education and introduction of more flexibility in the system could ensure quality output.

On the industry-institution cooperation, Prof. Dhananjaya said this could be achieved when the education system become more enterprising.

The workshop was organised to promote coordinated research, product development, curriculum development and also technical education planning. It intended to develop an information system to facilitate industry-institute interaction and generate sponsorship for research and development programmes through various schemes. The SJCE was planning to develop a database on the areas where the industry and institutions could cooperate.

Over 150 delegates from all over the country participated in the workshop.

DU Signs MoU with Foreign Varsities

The Executive Council of Delhi University is reported to have decided to enter into exchange programmes with several leading universities of the world to promote international understanding and to facilitate exchange programme. This was revealed by Prof. K.K. Panda, Registrar, in New Delhi recently.

The universities with which the Memmorandum of Understanding (MoU) was signed were: Harvard University (USA), University of Hull (UK), University of Central England, Hosei University (Japan), Renim University (China), University of Technology (Sydney) and Pusan University of Foreign Studies (Korea).

The University has also become the first Indian University to sign a Memmorandum of Understanding with the well-known FERMI Laboratory of USA. As per the agreement arrived at with the University of California, the student exchange programme will begin from July this year. The proposed exchange programme would be "non-degree" in nature, as the students would remain enrolled with the faculties of their respective universities. Moreover, they would obtain degrees from the home university.

IGNOU Launches Courses Abroad

The Indira Gandhi National Open University (IGNOU), proposes to launch some of its select courses in foreign countries. This was revealed by the university's Vice-Chancellor, Prof Ram Takwale, in his annual report, presented at the eighth convocation of university held in New Delhi recently. He said that IGNOU would be launching its Bachelor of Computer Applications programme in six countries in the Middle East; and Management, Tourism Studies, Engineering, B.A. and B Com degree programmes in Dubai and Abu Dhabi.

Prof. Takwale said that a tripartite agreement among IGNOU, the Government of India and the Government of Maldives was also being finalised for commencing B.A. and Bachelor Preparatory Programmes (BPP) in the Indian Ocean island. Negotiations were also under way for the launching of IGNOU programmes in Nepal, Kuwait, Sultanate of Oman and the Caribbean countries as well.

IIM-Lucknow Convocation

The former Union Finance Minister, Dr. Manmohan Singh, stressed the need for increased capacity to absorb, adapt and assimilate new technologies into production process along with a mind-set which accepts the inevitability of change and celebrate it. He was speaking as the chief guest at Indian Institute of Management's 11th convocation. Dr. Singh said that institute of managements "play a major role in modernising our thinking about management strategies and practices in a fast changing world".

Dr. Singh said that the speed of social and economic change had fallen far short of the aspirations of the people and the objective potential of our economy.

Comparing the economic scenario with the South East Asian countries, he said that though rich in natural and human resources, India had lagged behind these countries. "In the early 1960s, India and South Korea had roughly the same per capita income. Today Korea's per capita income is $ 12,000 compared to India $ 250".

India had also lagged behind in terms of such basic social indicators as literacy rate, infant mortality rate and life expectancy at both, Dr. Singh said. He pointed out that while China and other countries of East and South East Asia had emerged as a new power house of the world economy, India continued to be marginal player in the global economy. It was only after accepting these harsh realities that the Government of India decided, in July, 1991, launched a wide ranging programme of economic reforms involving liberalisation of industrialisation and trade policies, and policies governing financial markets.

Tax reforms and a reduction of the fiscal deficit were also essential elements of the reform package. That these reforms had yielded impressive results was by now generally agreed. For one thing, India was able to overcome the grave economic crisis of 1991-92 in the shortest time period and without creating a largescale social and economic unrest.

Quoting Mahatma Gandhi, he said that the best way to development was to extend one's self to the needs of the poorest and the weakest. "Our country", he said "needs disciplined cadres of professional workers, filled with intense national pride and committed to pursuit of excellence and accountable to society at large.

The Chairman of the IMM, Mr Hari Shankar Singhania said that the massive restructuring in the various spheres was taking place. He said that information age would be written off as a failure if it did not widely purvey knowledgeable insights into the increasing economic interaction, allied to the social and political changes.

Workshop on Teaching Vocational English

A three-day Workshop on Teaching Vocational English was recently organised by British Council, in collaboration with Centre for Organisational Research & Development (CORD) at Puri. Participants included teachers and students from different educational institutions.

Mrs Sukla Mitra, English Studies Officer of British Council, Calcutta acquainted the participants with the newly launched BEC (Business English Certificate) Examination Programme of Cambridge University for Indian People. Dr. Chittaranjan Misra from the P.G. Dept of English of S.C.S.College, Puri emphasised the merit of NGOs involvement in the transmission of expertise to the beneficiary groups.

CORD proposes to start a Functional English Learning Centre for BEC candidates of Puri involving experts from ELTI, Bhubaneshwar. Further details can be had from Mr. Srinibasa Sarangi, Chief Consultant cum Secretary, CORD, Red Cross Road, Puri - 752 002.

National Awards for Science Popularisation

The Union Minister of State for Science and Technology, Professor Y.K. Alagh, gave away the National Awards for Science Popularisation in New Delhi recently. Speaking on the occasion he said scientific approach should form an integral part of our thoughts and action. The scientific temper must be inculcated among the masses, he urged.

The first award, carrying Rs. 1,00,000, was given posthumously to Late Prof. N.C. Rana for popularising astronomy through workshops, books and spreading knowledge about the science. The second award of Rs. 50,000 was given to Mr. Gunakar Muley for his articles on science in various newspapers, magazines and also for writing scientific books in Hindi. The third prize for popularising science among children was given to Prof. Man Mohan Singh. The prize, comprising Rs. 50,000, was given for his effort in organising science fairs, do-it-yourself activities etc.

Dravidian Varsity Bill Passed

The Andhra Pradesh Assembly is reported to have passed a Bill for the establishment of a Dravidian University in Kuppam in Chittoor district.

The university would foster and strengthen national integration through a wider knowledge and understanding of literature, culture, sciences, medicine, engineering and technology among the southern States of Andhra Pradesh, Tamil Nadu, Pondicherry, Karnataka and Kerala.

Mr G M C Balayogi, Minister for Higher Education, said that the establishment of the university would entail an expenditure of Rs.12 crore out of which the Central government would contribute 50 per cent.

RV Favours Concept of Autonomy

The former President, Mr. R. Venkataraman, called for the grant of more autonomy to higher education institutions to ensure greater flexibility in the curriculum. "Rigidity in academic pursuits will kill a student's initiative to learn", Mr. Venkataraman said. He was addressing a meeting to observe the memory of the late Prof. K.R. Sundararajan, founder of Meenakshi College and the IIET in Chennai recently. Stating that the present academic curricula was too rigid, offering very little choice for students, Mr. Venkataraman noted that a student now had to learn only a fixed group of subjects to get a degree. In Western universities, one was free to choose even, what are perceived here as "incompatible groups of subjects", to attain a degree, getting credits in the chosen subjects. But in the prevailing rigid system, a student was strong only in a few subjects in the same degree and did not perform well in some other subjects. By introducing credit-based system in the semester pattern in a more autonomous atmostphere, the quality of higher education could be improved.

The concept of autonomy was most dear to Prof. 'KRS' as he was popularly known, Mr. Venkataraman said. "We need more autonomy for the colleges to give us the liberty to frame curriculum and syllabi" he added. The former President said the institution planned to found an engineering college, a dream of Prof. KRS. In the long term the Trust hoped to found also a medical college and see that the institutions grew into a university for providing quality in higher education.

Dr. S. V. Chittibabu, former Vice-Chairman, State Council for Higher Education, urged the intelligentsia to contribute to the regeneration of the education sector, which faced the peril of falling in wrong hands due to increasing commercialisation. Describing the late Sundararajan as a great educationist and administrator, Dr. Chittibabu wanted the college to maintain his ideals of quality, equity and equality in education.

R & D Centre at Padmavathi Varsity

Sri Padmavathi Mahila Viswavidhyalayam, Tirupati, proposed to set up a State-level centre for research and development exclusively for women, to conduct research on all issues pertaining to women and extension activities.

Prof. (Ms) P Geervani, Vice-Chancellor, said the proposed centre will act as a nodal body to procure data on women, impact of government programmes for women and improvements achieved through these programmes. Prof. Geervani said that the university had proposed a number of programmes in the Ninth Plan and resolved to submit the proposals to the University Grants Commission and the State government for their approval. The Institute of Management Studies and the School of Science and Technology proposed to introduce vocational courses. A Career

(Contd. on page 26)

OUTLAYS AND EXP

Total Plan and Non-Plan Budge

	State/UT	*1993-94 (Actual)*			
		Plan	*Non-Plan*	*Total*	*Plan*
	1	*2*	*3*	*4*	*5*
1.	Andhra Pradesh	1392.18	6625.99	8018.17	1341.31
2.	Arunachal Pradesh	126.65	272.23	398.88	151.53
3.	Assam	732.40	2168.78	2901.18	987.10
4.	Bihar	1401.50	5917.14	7318.64	1221.35
5.	Goa	66.29	364.25	430.54	73.60
6.	Gujarat	662.36	6271.43	6933.79	812.89
7.	Haryana	434.89	2966.11	3401.00	636.95
8.	Himachal Pradesh	407.17	944.33	1351.50	442.33
9.	Jammu & Kashmir	246.87	1521.48	1768.35	307.92
10.	Karnataka	1546.87	4661.38	6208.25	2029.18
11.	Kerala	629.83	3663.53	4293.36	835.09
12.	Madhya Pradesh	1710.55	5807.38	7517.93	2200.78
13.	Maharashtra	1808.99	11299.70	13108.69	2054.37
14.	Manipur	93.88	343.78	437.66	121.17
15.	Meghalaya	126.76	356.09	482.85	175.31
16.	Mizoram	136.59	282.21	418.80	156.17
17.	Nagaland	126.82	552.77	679.59	155.88
18.	Orissa	904.58	2577.63	3482.21	1329.66
19.	Punjab	594.28	3449.28	4043.56	591.81
20.	Rajasthan	1072.08	4825.53	5897.61	1444.28
21.	Sikkim	52.96	135.95	188.91	75.04
22.	Tamil Nadu	1706.79	7051.21	8758.00	1531.23
23.	Tripura	176.38	466.61	642.99	221.76
24.	Uttar Pradesh	2285.72	10994.41	13280.13	2763.54
25.	West Bengal	1022.90	5882.85	6905.75	1706.36
26.	A & N Islands	24.45	178.05	202.50	32.70
27.	Chandigarh	17.56	280.50	298.06	24.21
28.	D. & N. Haveli	9.52	35.24	44.76	10.73
29.	Daman & Diu	4.88	33.50	38.38	6.37
30.	Delhi	255.77	252.08	507.85	406.22
31.	Lakshadweep	17.89	64.08	81.97	17.99
32.	Pondicherry	72.60	240.61	313.21	100.46
	State/UTs	19868.96	90486.11	110355.07	23965.29
	Centre	24624.00	83545.00	108169.00	28937.00
	Grand Total	44492.96	174031.11	218524.07	52902.29

Source : *Annual Financial Statistics of Education Sector 1996-97.* Ministry of Human Resource Development, Department of Education, Planning & Monitoring.

ITURE ON EDUCATION - I

Expenditure of Centre and States/UTs

(Rs. in Crores)

1994-95 (RE)		*1995-96 (BE)*		
Non-plan	*Total*	*Plan*	*Non-Plan*	*Total*
6	*7*	*8*	*9*	*10*
7980.86	9322.17	1518.17	9369.99	10888.16
284.12	435.65	171.24	310.91	482.15
2254.78	3241.88	1330.02	2387.14	3717.16
6509.87	7731.22	1530.03	6880.09	8410.12
431.91	505.51	77.87	539.80	617.67
6516.73	7329.62	1139.23	7056.12	8195.35
6652.43	7289.38	718.36	4330.14	5048.50
1132.87	1575.20	517.63	1334.69	1852.32
2016.48	2324.40	267.47	2028.09	2295.56
5622.53	7651.71	2587.04	6506.59	9093.63
4348.78	5183.87	930.23	4930.96	5861.19
6093.74	8294.52	2785.31	6891.72	9677.03
12613.98	14668.35	2769.34	13996.36	16765.70
399.59	520.76	120.70	388.24	508.94
377.34	552.65	204.09	396.26	600.35
331.61	487.78	90.50	339.55	430.05
365.92	521.80	140.65	626.76	767.41
3252.39	4582.05	1433.43	3675.83	5115.26
5399.38	5991.19	674.02	6833.62	7507.64
5408.38	6852.66	1624.27	6163.92	7988.19
461.01	536.05	98.44	466.99	565.43
7655.93	9187.16	1648.52	8412.09	10060.61
487.80	709.56	309.93	587.18	897.11
12660.12	15423.66	3205.16	14835.84	18041.00
6734.58	8440.94	1941.18	7692.72	9633.90
205.24	237.94	44.15	252.44	296.59
304.72	328.93	33.28	315.41	348.69
38.55	49.28	10.86	53.67	64.53
37.67	44.04	8.14	48.58	56.72
1047.89	1454.11	676.24	1208.45	1884.69
82.48	100.47	22.70	92.34	115.04
259.51	359.97	113.14	278.12	391.26
107969.19	131934.48	28947.34	119230.61	148177.95
93965.00	122902.00	29330.00	106998.00	136328.00
201934.19	254836.48	58277.34	226228.61	284505.95

(*Contd. from page 23*)

Counselling and Placement Centre was also being proposed to guide the students. A PG Diploma on Human Rights, a Bachelor's degree in Fine Arts had also been proposed.

The Institute for Pharmacy which is running a B.Pharma course also proposed to start M.Pharma course as also Ph.D., she added.

Legal Literacy Programme

Atrocities against women were due to their ignorance of the law, said Union Minister for Human Resource Development Mr. S.R. Bommai. He was inaugurating a two-day legal literacy programme in New Delhi recently. He promised that the government would pass the 33 per cent Reservation Bill in the current session of Parliament and also make a law for education as a Fundamental Right.

The programme, which is a part of the ongoing activities of the Sunanda Bhadare Foundation, is designed to train para-legal volunteers with specific relevance to women's right. The National Commission for Women is also working for the programme.

"Due to the lack of legal awareness, women throughout the country, especially in remote villages, face all kinds of problems in their day-to-day life", Mr. Bommai said. He added that "this programme would not only help women deal with their own problems but also remove various kinds of anti-social practices — dowry, child marriage, *sati* and superstition".

Elaborating on the various international declarations and conventions, Justice A.S. Anand said all the facilities offered to normal citizens should be extended to the disabled persons. He also pointed out a Supreme Court ruling in which the court had held that the visually disabled person could appear in the Civil Services examinations and after his recruitment, be entitled to regular promotion.

Workshop on Population Education

The Centre for Adult and Continuing Education, Punjabi University, recently organised a one-day workshop for lecturers in-charge of the population education programme, including literacy, post-literacy and continuing education in colleges affiliated to the university.

Inaugurating the workshop Dr. Baldev Singh, Professor, Department of Economics, Punjabi University, highlighted the alarming statistics pertaining to population explosion in the world. He also dwelt on the main cultural factors which were responsible for it.

Dr. Madhu Gupta, Project Officer, Centre for Adult, Continuing Education and Extension Work, University of Jammu, informed the participants that after June 30 the UNFPA would enter the third phase of the project where emphasis would be laid on research in the field of population education.

Dr. Amrit Kaur, in-charge, Centre for Adult and Continuing Education, highlighted the role of the mass media in eradicating the traditional beliefs.

Papers entitled "Population education and environment" and "Population problem in the world" were presented at the workshop which was attended by over 25 lecturers.

SGTB College Convocation

Dr. Inder Pal Singh, Pro-Vice-Chancellor of Guru Nanak Dev University, called upon the youth to dedicate themselves to the service of the nation. He was delivering the convocation address after conferring degrees on 256 students of Sri Guru Tegh Bahadur College for Women in Amritsar recently.

Stating that even 50 years after Independence, 56 per cent of the people were illiterate. He advised young graduates to acquaint themselves with their rich history and heritage of spiritualism.

Mr. Kamleshwar Sinha, Associate Editor, The Tribune, who presided, said while the youngsters must be overflowing with a sense of achievement and a degree of pride, an older person could offer a few words for their immediate future. He said high status was good, but we must overcome the habit of mental resistance and opposition which might have been our pattern of behaviour until now. We must forget all the disappointments and frustration we have suffered. We must turn all our experiences to positive ends.

He advised the new graduates to be determined and to never lose their moorings. He also advised the youngsters to realise their duty to remove the darkness of illiteracy. Each new graduate should adopt at least one person under the literacy programme, he added.

Vocational Training Programme for the Disabled

Vocational training programme for the handicapped is proposed to be organised in several reputed institutions with technical courses aimed at the disabled.

The All India Council for Technical Education (AICTE) is reported to have identified the subject as one of its thrust areas and has appointed Prof. S.C. Handa, an eminent educationist, to visit various institutions in different parts of the country and mobilise support for the programme.

Prof. S. Rame Gowda, Chairman, AICTE, said that the Council was willing to provide seed-money to the tune of Rs. 15-20 lakhs to each of the chosen institutions. Leading centres in the country could take up training for the disabled in areas like electronics, computer and speech therapy to create better job opportunities.

A training centre at Roorkee University which imparted education to the deaf and dumb using modern computer software was an example, Prof. Gowda said. Using specialised software, the centre helped deaf and dumb students to integrate with the mainstream.

Symposium on Research Methodology

The School of Vedic Studies, Rabindra Bharati University, organised a symposium on Research Methodology. The objective of the symposium was to discuss the principles of research and also to demonstrate their application in actual practice in respect of Sanskritic researches. The symposim was inaugurated by Prof. Pabitra Sarkar, Vice-Chancellor who laid stress on the great need for a thorough training in research methodology.

During the course of the symposium discussions were held on various aspects of the central theme like selection of a research topic, access point, tackling the research problem, use of reference tools, abbreviations, footnotes, preparation of bibliography, preservation and use of manuscripts, principles of preparing a critical edition, etc.

Refresher Course in Geology

The Department of Geology of the Mohanlal Sukhadia University, Udaipur, proposes to organise a four-week refresher course in Geology under Special Assistance Programme of the UGC. The course contents include (i) Petrology, Mineralogy, Geochemistry; (2) Sedimentology, Dynamic & Magneto-Stratigraphy, Geostatistics; (3) Tectonics and applications of structural geology, Geological application of Remote Sensing; (4) Exploration Geology & Applications of Fluid inclusion studies; and (5) Micropalaeontology & environmental Geology.

The course is intended for teachers employed in colleges and universities in Rajasthan and neghbouring regions, Research Fellows of the U.G.C./D.S.T./C.S.I.R. etc.

Further details may be obtained either from Professor A.B. Roy, Course Director or Dr. P. Kataria, Organising Secretary Refresher Course in Geology, Department of Geology, M L Sukhadia University, Udaipur - 313 002.

Alconesy '97

A two-day national technical symposium, "Alconesy '97", organised by the Department of Electrical and Electronics Engineering of Alagappa Chettiar College of Engineering and Technology concluded recently at Karaikudi. The symposium, in which 20 technical papers were presented, served as a platform for confluence of students from engineering colleges all over the country.

Dr. K.L.P. Mishra, Principal, Regional Engineering College, Tiruchi, who inaugurated the symposium, highlighted the duty of the teachers in enhancing the *quality of technical education*.

Dr. P. Ramasamy, Vice-Chancellor, Alagappa University, in his valedictory address, said such symposia served as channels of national integration.

PU Prof. Nominated for Nobel Prize in Physics

Prof. Raj K. Gupta of the Department of Physics of Panjab University, has been nominated for this year's Nobel Prize for Physics along with a German scientist, Prof. Walter Greiner of the University of Frankfurt.

They have been nominated for their work on the united theory that had led to the synthesis of new super heavy elements. The theory, which was propounded by Professor Gupta and Professor Greiner in 1974-75 when the former was a Humbold Fellow at the University of Frankfurt, was experimentally confirmed last year.

It might be recalled that the last two super heavy elements, 110 and 112 synthesised at a laboratory in Germany last year, used the same reactions that were recommended by Professor Gupta and Professor Greiner. Earlier this theory had predicted the phenomenon of cold fission and cluster radioactivity.

Training Course on Information Handling

The All India Institute of Medical Sciences (AIIMS) recently hosted a national training course on modern technologies for information handling.

To further the application and use of modern technologies in information handling, about 50 participants comprising librarians, information science specialists, documentalists, R&D scientists, teachers in library science, health scientists and computer professionals from all over the country attended the training programme.

Higher Education — Vision 2000

The State Education Minister, Mr. K. Anbazhagan, said that the State Government would favourably consider the issue of granting permission to private in stitutions for conducting forenoon and afternoon colleges. The move would result in optimum utilisation of the basic infrastructure and other facilities. It would also create more seats for admission seekers. However, the granting of permission would depend on the track record of the management.

The Minister was inaugurating a State-level conference on "Higher Education—Vision 2000", organised by the Tamil Nadu Federation of the Associations of Managements of Private Colleges and the Association of Managements of Private Colleges, Chennai.

The Government was also considering categorisation of private colleges as "aided" and "unaided" and framing rules for governance on the basis of their grouping.

News from AICTE

AICTE Signs MoU with Foreign Institutes

The All India Council for Technical Education (AICTE) is reported to have signed Memoranda of Understanding (MoUs) with institutions in countries such as the U.S., Canada, England and France for the training of teachers and students.

Prof. S Rame Gowda, Chairman, AICTE, said in Chennai that the MoUs would help educational institutions in India to have meaningful interaction with partner countries and conduct training programmes.

Prof. Rame Gowda said the services of Indian technical education experts had been sought by several countries with socio-political and economic backgrounds similar to that of India. Many countries in Africa, Asia-Pacific and Latin America had asked for assistance in technical education.

The Council would send experts to these countries on request, Prof. Rame Gowda said. The countries believed that there were many parallels between them and India and the latter's achievements in the field of technical education could be taken as a model. The colonial legacy and the nature of development also could be a common denominator.

News from Agricultural Universities

Workshop on Nutrition at AAU

About 50 per cent of people in the country are still suffering from malnutrition", observed Dr. A R Baruah, the Acting Vice-Chancellor of the Assam Agricultural University. He was inaugurating a state-level workshop on "Micronutrients; compliance for vitamin A; anaemia and iodine deficiency disorder" in the Jorhat Campus of the University recently.

Dr. Baruah stressed that all concerned organisations make sincere efforts to educate the underprivileged section, so that they accept new ideas regarding health care and other important subjects. Referring to the gradual deterioration of human values, Dr Baruah reminded that unless the scientists, administrators as well as other workers render service with a missionary zeal, the benefits of Science would not percolate to the poor and needy people.

The two-day workshop was organised by the Food and Nutrition Department of the Faculty of Home Science with the financial assistance provided by the UNICEF. Altogether 50 medical professionals, nutrition scientists, child development project officers, dieticians and extension specialists from various parts of the State including the AAU, participated in the workshop.

ICRISAT Team Visits ICAR Centres

The Governing Board members of ICRISAT visited ICAR research facilities and Acharya NG Ranga Agriculture University (ANGRAU) in Hyderabad recently. They were briefed about the ICRISAT's collaborative programmes with ICAR and ANGRAU.

"We are impressed with the quality of the work and research facilities at the ICAR institutes and ANGRAU, and their interaction with ICRISAT. We have to identify new areas of research for further collaboration with them in addition to strengthening their ties with us", said Prof. Hans-Juergen von Maydell, Chairman of ICRISAT Governing Board.

News from UGC

Countrywide Classroom Programme

Between 1st and 7th April, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m

1.4.97

"Heading for a Global Village"

"Solar Cooker"

"Human Genetics-Chromosome Aberration-II"

3.4.97

"Counter Urbanisation : A New Trend"

"Coal-II : From Pithead to Blast Furnace"

"Film Appreciation : Film Criticism-II"

5.4.97

"The Search of Primes"

"Insect Migration"

"Air-Pollution-1"

6.4.97

"Kerala Kala : Kathakali"

"Mahatma Gandhi as a Journalist"

"Folk Rhythms-I"

IInd Transmission

1.00 p.m. to 2.00 p.m.

1.4.97

"Redeeming Rhesus Babies"

"Chemistry of Vision"

"Law Education : Moot Courts"

2.4.97

"Horticulture"

"Cousins and Distance Cousins-III"

"Archaic Scripts of the World"

3.4.97

"Fibre Optic Communication"

"Earthquakes : Global Perspective-I"

"Elements of Marketing"

4.4.97

"Postal System-I : History"

"The Call of the Wetland"

5.4.97

"Sound of Voices"

"Understanding Cinema-XI : Film and Spectator Relationship"

"Remote Sensing"

6.4.97

No Telecast

7.4.97

"Principles of Magneto Hydrodynamic : Power Generation"

"Integrated Marketing Communication"

"Conquerers of Nature : The Succulent Plant"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

2.4.97

"क्षिप्रा : कल और आज"

"लम्बे पिता, छोटे पुत्र समाश्रयण"

4.4.97

"परवलय – 1"

7.4.97

"जैक और जिल की कहानी"

"मिखाईल बख्तिन – 1"

News from Abroad

Dr. Landfried is President of HRK

Professor Klaus Landfried, President, University of Kaiserslautern and Vice President (International Affairs) Hochschul Rektoren Konferenz (HRK — Association of Higher Education Institutions in Germany) has been elected its President. He succeeds Prof. Dr. Hans Uwe Erichsen.

In 1994 Prof. Landfried took over as Vice President (International Affairs). Prior to it he was the Vice President (Higher Education Planning, Capacity and Admission Issues).

Prof. Landfried was a member of the German delegation which visited India recently to sign a Memorandum of Understanding (MoU) between the Association of Indian Universities and HRK for cooperation in the field of higher education.

Physical Research Laboratory

Navrangpura, Ahmedabad 380 009

(Advt. No. 6/97)

OPPORTUNITIES FOR RESEARCH AND TRAINING

Physical Research Laboratory, Ahmedabad offers excellent research opportunities in various areas of Theoretical and Experimental Physics as outlined below:

ASTRONOMY AND ASTROPHYSICS

Infrared and Optical Astronomy, Solar Physics (Udaipur Solar Observatory)

EARTH SCIENCES AND SOLAR SYSTEM STUDIES

Geochemistry and Geochronology, Oceanography, Palaeoclimatology, Solar System and Meteorite Studies.

LASER PHYSICS AND QUANTUM OPTICS

PLANETARY ATMOSPHERES AND AERONOMY

Earth's Middle Atmospheric Studies, Ionospheric Physics, Laboratory Astrophysics, Planetary Atmospheres

THEORETICAL PHYSICS

Astrophysics, Atomic and Molecular Physics, High Energy Physics, Nuclear Physics, Plasma Physics, Non-Linear Dynamics, Computational Physics

Bright and highly motivated students and young scientists are encouraged to apply for research and training under the following categories:

a. Ph.D. PROGRAMME: M.Sc. students with First Class or High Second Class degree in Physics/Chemistry/Applied Mathematics/Geology/Geophysics/Oceanography and with Physics and Mathematics as subjects in their B.Sc. degree are selected in this programme to pursue research leading to Ph.D. degree under the guidance of Senior Scientists of the Laboratory. Those who are appearing for their M.Sc. Degree this year are also eligible to apply. The Research Scholars are selected on the basis of their *academic record, written test and personal interview. They will be required to undergo a course work in various topics during the first* year and continuation of the research scholarship is subject to successful completion of this course work.

b. PROJECT ASSOCIATESHIP PROGRAMME: M.Sc. students with First Class or High Second Class degree in Physics/Chemistry/Applied Mathematics/Geology/Geophysics/Oceanography, and with Physics and Mathematics as subjects in their B.Sc. degree are selected in this programme to work in association with Senior Scientists in specific experimental programmes and to participate in the associated theoretical/modelling activities. Those who are appearing for their M.Sc. Degree this year are also eligible to apply. Research aptitude is an important desirable qualification. The candidates are selected on the basis of their academic record, written test and personal interview. They will be required to develop appropriate experimental skills and theoretical modelling capabilities as required.

The Project Associateship will be awarded initially for one year, but may be continued for upto three years depending on the *progress made by the individual. A few of the selected Project Associates who do exceptionally well may be considered for suitable* permanent positions in the Laboratory.

c. POST DOCTORAL RESEARCH PROGRAMME : Young Scientists with Ph.D. degree in Physics, Chemistry or any branch of Earth Sciences and preferably having experience in these fields are selected as Post Doctoral Fellows to do research in any of the fields mentioned above. Those who have submitted their Ph.D. Thesis are also eligible to apply. Tenure of the Post Doctoral Fellows will be for one year and is extendable for another year subject to satisfactory progress.

SCHOLARSHIP/FELLOWSHIP

a. For Ph.D. PROGRAMME: Rs. 2800/- per month plus medical care. The scholarship may be raised to Rs. 3000/- per month after two years and to Rs. 3200/- per month after four years subject to appropriate evaluation. A book allowance of Rs. 3000/- per year for four years, starting from the first year of Research Scholarship, is also provided. Selected candidates are provided accommodation *in the Students'* Hostel.

b. For PROJECT ASSOCIATESHIP PROGRAMME: Rs. 3500/- per month plus medical care. Hostel facilities at a nominal rent or house rent of Rs. 650/- per month (in lieu of non-availability of Hostel Accommodation) may be provided during the Associateship period.

c. For POST DOCTORAL RESEARCH PROGRAMME: Rs. 4000/- to Rs. 4500/- depending on the experience plus medical care. In case of non-availability of accommodation, house rent of Rs. 650/- per month will be given.

PROCEDURE FOR APPLICATION

For Ph.D./PROJECT ASSOCIATESHIP PROGRAMMES: *Additional information and application forms for the Ph.D. Project* Associateship programmes can be obtained from

The Administrative Officer - I
Physical Research Laboratory
P.O.Box No. 4218
Navrangpura, Ahmedabad 380 009

Duly completed application forms should reach the above address on or before 10th May, 1997. Selected candidates called for the written test and interview from outstations will be paid to-and-fro second class railway/bus fare (whichever is less) by the shortest route from the address given in the application.

For POST DOCTORAL RESEARCH PROGRAMME: The application on plain paper for Post Doctoral Fellowship containing (a) bio-data and list of publications, (b) highlights of thesis (c) brief research proposal should be sent to:

The Dean, Physical Research Laboratory, P.O.Box No. 4218, Navrangpura, Ahmedabad 380 009

In addition, the candidate should arrange for at least two letters of recommendation to be sent directly to the above address. The last date for receiving the completed application is 30th May, 1997. Candidates called for interview from outstations will be paid to-and-fro first class train/bus fare by the shortest route from the address given in the application.

BOOK REVIEW

An Appreciable Attempt

R.K. Mittal*

A. Mukherjee and M. Hanif. Fundamentals of Accounting for CA Foundation Course. New Delhi, Tata McGraw Hill, 1996. Pp. 737. Rs. 165.

Many books on accounting are available in the market, which are written, especially to cater to the requirements of graduates and postgraduates in commerce and management. Very few books are addressed to the needs of CA foundation course. A book on accounting to come upto acceptable standards should be sound both theoretically and numerically. It should be complete in terms of subject matter and conceptually clear. It is expected to be consistent throughout and systematic with proper linkage of sub aspects. The language should be simple.

The present volume is an appreciable attempt by the authors to meet the requirements of CA foundation course. The entire book is divided into thirty one chapters. True or false and multiple choice questions at the end of each chapter enhance its utility to the users.

Chapter one is introductory covering briefly the aspects, such as meaning, functions and characteristics, objectives, advantages and limitations, evolution, subfields of accounting, besides giving a comprehensive description of characteristics of financial statements. Functions of accounting could be further elaborated. Accounting as a measurement discipline has been described in chapter two. Apart from explaining value and valuation, various accounting principles have been brought out in Chapter three. The terms 'principle', 'convention', 'postulate', 'doctrine', 'axiom' and 'concept' have been distinguished to provide an objective view to the readers. In the next Chapter, accounting has been related to economics, statistics, law, management, and engineering. This has been followed by relationship between capital and income, accounting, and economic concepts of income in Chapter five. The procedure for recording business transactions in the journal and preparation of ledger accounts has been explained with the help of quite a few illustrations in Chapter six. It would have been better if a few more exercises had been given at the end of the chapter.

The procedure of preparing trial balance and cash book has been explained in the subsequent two chapters. However, the number of exercises on cash book appear to be inadequate for the purpose of practice. Chapter nine on bank transactions and bank reconciliation statement is excellent in terms of theoretical setting and numerical framework with a good deal of illustrations and exercises. The accounting procedure for recording transactions in subsidiary books has been explained with the support of simple illustrations in Chapter ten. The succeeding two chapters describe with sufficient detail capital and revenue expenditure and receipts, bad debts, and provision for bad and doubtful debts supported by a required number of illustrations.

Different methods of depreciation have been treated excellently in Chapter thirteen. Due weightage has been given to inventories in Chapter fourteen. Bills of exchange in Chapter fifteen have been illustrated comprehensively, leaving hardly any scope for the students to consult any other book. Similarly, in chapters sixteen and seventeen on consignment accounts and joint venture accounts respectively, Mukherjee and Hanif have not left scope for further improvement by enabling the users to get acquainted with various facets of these accounts.

Average due date and account current have been dealt with chapter eighteen. However, the authors could have given a few more exercises at the end to give ample scope for practice to the students. Cash and accrual bases of accounting have briefly been explained in the next chapters with an emphasis that it calls for. Preparation of final accounts with adjustments supported by adequate number of illustrations and exercises has been brought out in Chapter twenty. Rectification of errors, manufacturing account and cost statement, and accounting for non-profit organisations in the next three chapters have been elaborated satisfactorily with a good number of numerical problems.

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*Professor, Department of Business Studies, Faculty of Management & Business Studies, Kurukshetra University, Kurukshetra-136 119.

Chapter twenty four deals with self-balancing of ledger, incorporating large number of illustrations. In the subsequent five chapters the authors have made a good attempt to explain different dimensions of partnership accounts. The accounts of professional concerns have just been touched upon in Chapter thirty. The authors are called upon to incorporate more details in this chapter. Similarly, a brief description of provisions and reserves has been given in the last chapter.

Some errors and drawbacks can be noticed in the volume. For instance, on page 1.2 full reference of the author, Moonitz has not been given. Answers to objective type questions at the end of first chapter have not been given. Similarly, complete references of authors, Hendriksen on page 3.2, Robert N. Anthony on page 3.3 Glautier and Underdown, and Fisher on page 5.2, and Sir John Hicks on page 5.3 have not been given. Belkaoui has been written as Belkaouri on page 5.2 The language could be simple.

Nevertheless, these flaws are not very serious and do not bring down the quality of the work in any way. The size and presentation of the book is very attractive. Printing is highly satisfactory with the price being quite reasonable. Both the authors are highly qualified with specialisation in accountancy. It is a very balanced book with systematic presentation of subject matter. The quality of the paper used is also good. The publication is expected to be well received by those for whom it is meant.

राष्ट्रीय अध्यापक शिक्षा परिषद
NATIONAL COUNCIL FOR TEACHER EDUCATION
15, I.P. ESTATE, MAHATMA GANDHI MARG, NEW DELHI - 110 002.

PUBLIC NOTICE

(For Attention of Teacher Education Institutions)

Under Section 14(1) of the National Council for Teacher Education (NCTE) Act, 1993 (No.73 of 1993) every institution offering or intending to offer a course or training in teacher education on or after the appointed day i.e. August 17, 1995 has to make an application to the concerned regional committee of the NCTE, for recognition in the prescribed format and manner. Under proviso to *section 14(1) all 'existing institutions' as on 17.8.1995 were required to submit their applications for recognition to the concerned* regional committee of the NCTE within a period of six months from the appointed day and if they do so they are entitled to continue their course or training in teacher education until disposal of their applications by the NCTE

Section 17(4) of the NCTE Act, provides that if an 'existing institution' fails or neglects to obtain recognition under this Act, the qualification in teacher education obtained after undertaking a course or training in such an institution shall not be treated as a valid qualification for purposes of employment under the Central Government, any State Government or University, or in any school, college or other educational bodies aided by the Central Government or any State Government.

Further under Section 16 of the Act, no university or any other examining body shall grant affiliation, whether provisional or other wise to an institution or hold examination, whether provisional or otherwise, for a course or training conducted by an institution unless the institution concerned has obtained recognition from the concerned regional committee of the NCTE

The term 'institution' has been defined in the NCTE as an institution which offers a course or training in teacher education. As such all institutions offering teacher education courses of any kind or level, including the University Departments of Education running teacher education courses are covered under this definition.

It has come to the notice of the NCTE that a number of institutions in several States have not yet submitted their applications for recognition to the concerned regional committee of the NCTE. All such institutions are hereby advised to submit their applications, *latest by **April 1, 1997**,* to concerned regional committees of the NCTE *in the prescribed format obtainable from the office of the regional committees at a cost of Rs.100/- (Rupees One hundred only).* For further details contact the office of the concerned Regional Director at the following addresses and telephone numbers.

Address	**States/UTs**
1. *The Regional Director, Eastern Regional Committee (NCTE)* N-2/82, IRC Village Nayapalli, **Bhubaneshwar -751 015.** Ph. 0674-418 349	*Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya,* Mizoram, Nagaland, Orissa, Sikkim, West-Bengal, Tripura, A&N Islands.
2. *The Regional Director, Western Regional Committee (NCTE)* Manas Bhawan, Shyamla Hills, **Bhopal - 462 002.** Ph.0755-530 912.	Goa, Gujarat, Madhya Pradesh, Maharashtra, D&N Haveli, Daman & Diu.
3. The Regional Director, Northern Regional Committee (NCTE) A-46, Shanti Path, Tilak Nagar, **Jaipur - 302 004.** Ph. 0141-620 116.	Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh, Chandigarh, Delhi.
4. The Regional Director, Southern Regional Committee (NCTE), 66, 6th Main, 4th Block, Rajaji Nagar, **Bangalore - 560 010.** Ph. 080-330 6590.	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Laksha-Dweep, Pondicherry.

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MEMBER SECRETARY

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during February 1997

EDUCATIONAL PHILOSOPHY

Uhle, Reinhard. Hermeneutical education in the critical situation of the arts. **Edn** 53,1996, 53-64.

EDUCATIONAL PSYCHOLOGY

Agarwal, Kailash S. Listening an educational agenda. **J of Hr Edn** 19(2), 1996, 167-79.

Bacdayan, Andrew W. A mathematical analysis of the learning production process and a model for determining what matters in education. **Eco of Edn Rev** 16(1), 1997, 25-37.

Passi, BK and Prabhu, Sugandhi R. Stressfree superlearning. **Progress of Edn** 71(7), 1997, 146-51.

Taylor, Alton L and Koch, Andrey M. The cultural context of effective strategy. **New Directions for Hr Edn** 94, 1996, 83-6.

EDUCATIONAL SOCIOLOGY

Majumdar, Manabi. Exclusion in education : Evidence from Indian states. **J of Ednl Plann and Admn** 10(2), 1996, 121-42.

EDUCATIONAL POLICY AND PLANNING

Pinto, Ambrose. Whither educational policy, 1986? **J of Hr Edn** 19(2), 1996, 219-30.

EDUCATIONAL ADMINISTRATION

Anand, Y K and others. Institutions accreditation : A new framework. **Indian J of Tech Edn** 19(4), 1996, 42-5.

Court, Stephen. The use of time by academic and related staff. **Hr Edn Q** 50(4), 1996, 237-60.

Chan, Padma S. Improving higher education : A strategy for action. **J of Hr Edn** 19(3), 1996, 413-20.

Hickie, Desmond and Sawkins, Martin. Quality in industry and education : Finding common ground. **Q Assurance in Edn** 4(4), 1996, 4-8.

Klafki, Wolfgang. Core problems of the modern world and the tasks of education : A vision for international education. **Edn** 53,1996, 7-18.

Landry, Rejean and others. An econometric analysis of the effect of collaboration on academic research productivity. **Hr Edn** 32(3), 1996, 283-301.

Phillips, Marion and Stevens, Valda. Gathering students feedback as an aid to staff development. **Open Learning** 11(3), 1996, 38-40.

Pradhan, Nityananda. Decentralised management of education and 73rd constitutional amendment. **Experiments in Edn** 24(10&11), 1996, 160-5.

Robert, M. Education process re-engineering. **Management Accountant** 31(12), 1996, 895-7.

CURRICULUM

Das, Veena. Towards the re-structuring of undergraduate education. **J of Hr Edn** 19(2), 1996, 259-74.

Narain, Nandita. Restructuring of undegraduate education. **J of Hr Edn** 19(2), 1996, 275-80.

TEACHERS & TEACHING

Pennell, James R and Firestone, William A. Changing classroom practices through teacher networks : Matching program features with teacher characteristics and circumstances. **Teachers College Record** 98(1), 1996, 46-76.

Vasanthi, R and Anandhi, E. A study of some factors affecting teacher effectiveness of BEd student teachers. **Progress of Edn** 71(6), 1997, 137-40.

EDUCATIONAL TECHNOLOGY

Ramanujam, K N. Computers application in research. **Management Accountant** 32(1), 1997, 10-2.

Arora, M and others. Which are the best undergraduate medical college in India? **J of Hr Edn** 19(3), 1996, 333-52.

ECONOMICS OF EDUCATION

Arumugam, P and Paul, P James Daniel. Determinates of private cost of PhD research : A case study. **J of Hr Edn** 19(3), 1996, 365-74.

Behrman, Jere R. Measuring the effectiveness of schooling policies in developing countries : Revisiting issues of methodology. **Eco of Edn Rev** 15(4), 1996, 345-64.

Myers, Richard S. Restructuring to sustain excellence. **New Directions for Hr Edn** 94, 1996, 69-82.

Psacharopoulos, George. Economics of education : A research agenda. **Eco of Edn Rev** 15(4), 1996, 339-44.

VOCATIONAL EDUCATION

Usha Sri, V. Implementing instructional design in B Ed course. **J of Hr Edn** 19(2), 1996, 251-8.

LIBRARIES & BOOKS

Ruess, Diane E and West, Sharon M. Library and information literacy for distance education students. **J of Distance Edn** 10(2), 1995, 73-85.

DISTANCE EDUCATION

Koble, Margaret A. Integrating technologies in distance education. **Open Learning** 11(3), 1996, 41-4.

Lionarakis, Antonis. The establishment of the Hellenic Open University. **Open Learning** 11(3), 1996, 53-8.

Yadav, M S and Panda, S K. Distance higher education in India : A historical overview. **J of Hr Edn** 1996, 437-60.

COMPARATIVE EDUCATION AND AREA STUDIES

Goedegebuure, Leo and Vught, Frans Van. Comparative higher education studies : The perspective from the policy sciences. **Hr Edn** 32(4), 1996, 371-94.

Morisset, Jacques and Revoredo, Cesar. Saving and education : A life-cycle model applied to a panel of 74 countries. **J of Ednl Plann and Admn** 10(2), 1996, 97-119.

ALAGAPPA UNIVERSITY

KARAIKUDI

Applications for admission to the following courses are invited from candidates possessing the qualifications specified against each course, for the academic year 1997-1998.

COURSES OFFERED		ELIGIBILITY
1. M.A. TAMIL	:	B.A./B.Sc. Degree with Tamil under Part I or III/B.Litt.
2. M.W.S. (Master of Women's Studies)	:	Graduate with an aptitude for Women's Studies. Both Men and Womena are eligible.
3. M.Ed. (Master of Education)	.	B.Ed. Degree
4. B.Ed. (Bachelor of Education) Optional Subjects: Tamil, English, Maths, Biological Sciences, Physical Sciences, History, Commerce)	:	Any Degree
5. M.C.S (Master of Corporate Secretaryship)	:	B.A. Corporate Secretaryship/B.Com./B.B.A./B.L./ B.BB.M./B.A. Co-operation Any other Degree holder with First Class/Any Graduate who has passed the intermediate examination of ICSI/ICAI or ICWAI.
6. M.Sc. MATHEMATICS	:	B.Sc. Maths/B.Sc (Special Maths)/B.Sc. Applied Science.
7. M.Sc. PHYSICS	:	B.Sc.Physics/B.Sc.(Special Physics)/B.Sc. Applied Science (Minimum of 55% in Part III, for SC/ST candidates 45%).
8. M.Sc. INDUSTRIAL CHEMISTRY TEXTILE CHEMISTRY	:	B.Sc. Chemistry/B.Sc. Special/B.Sc. Applied Science with any two of Maths, Physics and Textile as ancillary subjects.(Minimum of 55% in Part III, for SC/ST candidates 45%).
ELECTRO CHEMISTRY	:	B.Sc. Chemistry with Maths and Physics and Ancillaries/ B.Sc. Special/B.Sc. Applied Science (Minimum of 55% in Part III, for SC/ST candidates 45%).
9. M.COM.	:	B.Com./B.B.A./B.A. Co-operation/B.B.M./B.A. Corporate Secretaryship/B.A. Economics with Accountancy as ancillary.
10. M.B.M.(Master of Bank Management)	.	Any Degree
11. M.Sc. COMPUTER SCIENCE (Evening Courses)	:	A First Class B.Sc. Computer Science (For SC/ST 55%)
12. M.C.A. (MASTER OF COMPUTER APPLICATIONS)	:	A First Class Degree in Physics/Chemistry with ancillary Mathematics or Maths/Statistics/Computer Science/Applied Science or B.B.A./B.Com./B.E. (For SC/ST 55%)
13. M.P.Ed. (MASTER OF PHYSICAL EDUCATION)	·	Any graduate who represented the School or College atleast in any one of the games or track and field events.
14. M.B.A. (MASTER OF BUSINESS ADMINISTRATION)	:	Bachelor's Degree in any Discipline
15. M.I.B.A. (MASTER OF INTERNATIONAL BUSINESS ADMINISTRATION)	:	Bachelor's Degree in any Discipline/ACA/ICWA/ACS Diploma.

Applications and Prospectus for courses under serial No.1 to 13 can be had on payment of Rs.150/- (for SC/ST candidates Rs.100/- with the production of Community Certificate) by DEMAND DRAFT only drawn in favour of the REGISTRAR, ALGAPPA UNIVERSITY, payable at KARAIKUDI.

Applications and Prospectus for courses M.B.A. & M.I.B.A. can be had on payment of Rs.300/- (for SC/ST candidates Rs. 200/- with the production of Community Certificate) by DEMAND DRAFT only drawn in favour of the REGISTRAR, ALAGAPPA UNIVERSITY, payable at KARAIKUDI.

There will be an Entrance Test for the courses with Sl. No. 5 to 15 as per schedule given below. The Entrance Test for all the eligible candidates will be held at Karaikudi, Tirunelvell, Madras & Coimbatore. The University reserves the right to cancel any test centre if it is not viable and such candidates will be allotted to other centre.

COURSE	DATE & TIME OF ENTRANCE TEST	
1. M.Sc. Computer Science (Evening Course)	14.06.97	10.00 am to 1.00 pm
2. M.C.A. (Master of Computer Applications)	14.06.97	02.00 pm to 05.00 pm
3. M.B.A. (Master of Business Administration)	15.06.97	10.00 am to 01.00 pm
4. M.Com.	16.06.97	10.00 am to 01.00 pm
5. M.Sc. Mathematics	16.06.97	02.00 pm to 05.00 pm
6. M.Sc. Physics	17.06.97	10.00 am to 01.00 pm
7. M.B.M. (Master of Bank Management)	17.06.97	02.00 pm to 05.00 pm
8. M.P.Ed. (Master of Physical Education)	18.06.97	10.00 am to 01.00 pm
9. M.Sc. Industrial Chemistry	18.06.97	02.00 pm to 05.00 pm
10. M.I.B.A. (Master of International Business Administration)	19.06.97	10.00 am to 01.00 pm
11. M.C.S. (Master of Corporate Secretaryship)	19.06.97	02.00 pm to 05.00 pm.

After the results are declared, the following provisions can be availed.

1. REVALUATION
2. RETOTALLING
3. *TO SEE YOUR ANSWER BOOK*
4. TO COMPARE YOUR ANSWER BOOK WITH ANOTHER CANDIDATE'S ANSWER BOOK

Shortlisted candidates based on the academic marks (upto 5 semesters in the case of Semster pattern and upto Two years in the case of Non Semester pattern) and the performance in the entrance examination will have to appear for personal interview, during the last week of June. They will be intimated by post.

LAST DATE FOR ISSUE & RECEIPT FOR APPLICATIONS FOR ALL COURSES : 07.06.1997

Candidates appearing for their final examination can also apply and the selected candidates have to produce their Marks Statements at the time of admission.

The previous year's question papers of the entrance examinations can be had from the office of the Registrar, by making a payment of Rs. 50/- per Question Paper by way of Demand Draft.

The University offers Ph.D. and M.Phil. Programmes in all the above disciplines.

KARAIKUDI-630 003 **REGISTRAR**

GURUKULA KANGRI VISHWAVIDYALAYA
HARDWAR - 249 404
(Deemed University)
ADMISSION NOTICE FOR SESSION 1997-98

Applications are invited for admission to

1. MASTER OF COMPUTER APPLICATIONS (MCA 3-YEARS P.G. COURSE)
2. MASTER OF BUSINESS ADMINISTRATION (MBA 2- YEARS FULL TIME P.G. COURSE)
3. P.G. DIPLOMA IN PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS (2-YEARS FULL TIME)

ELIGIBILITY FOR MCA : Graduate TDC with atleast 50% marks (45% for SC/ST/G.K.V. graduates) having Maths as one of the subjects at 10+2 level.

FOR MBA/PMIR : Graduate TDC with atleast 50% marks (45% for SC/ST/G.K.V. graduates)

AGE LIMIT : At least 20 years on July 1, 1997.

NO. OF SEATS :

MCA	:	30 for boys	(+ 10 sponsored/NRI) and
		15 for girls	(+ 15 sponsored/NRI)
MBA	:	20 for boys	(+ 10 sponsored/NRI) and
		20 for girls	(+ 10 sponsored/NRI)
PMIR	:	30 for boys	(+ 10 sponsored/NRI) and
		20 for girls	(+ 10 sponsored/NRI)

HOW TO APPLY

Application form and other details for entrance examination for each course may be obtained from the address as specified below on cash payment of Rs. 100 (Rs. 250 for sponsored) or by sending bank draft of Rs. 120 (Rs. 270 for sponsored) payable to Registrar. Those appearing in final year of qualifying exam may also apply.

FOR BOYS : MCA/MBA/PMIR : Registrar, Gurukula Kangri Vishwavidyalaya, Hardwar-249 404

FOR GIRLS : MCA/MBA/PMIR : Principal, Kanya Gurukula Mahavidyalaya, 47, Sevak Ashram Road, Dehradun

LAST DATE FOR SUBMITTING APPLICATION FORM : **APRIL 30, 1997**

DATE OF ENTRANCE EXAM : **JUNE 8, 1997**

TIMINGS FOR EXAM :
MCA 8:30 a.m. to 10:30 a.m.
MBA 11:30 a.m. to 1:30 p.m.
PMIR 2:30 p.m. to 4:30 p.m.

CENTRE FOR ENTRANCE EXAM : **Hardwar (Boys) Delhi (Boys & Girls) Dehradun (Girls)**

(Delhi centre may be shifted to Hardwar if the no. of candidates remains below the desired level)

Dr. S.N. Singh
REGISTRAR

DR YASHWANT SINGH PARMAR UNIVERSITY OF HORTICULTURE & FORESTRY, NAUNI (SOLAN) HP

'ACADEMIC BRANCH'

ADMISSION NOTICE

Applications are invited on the prescribed form for admission to the following programmes for the Academic Session, 1997-98 from the domiciles of Himachal Pradesh only.

1. B.Sc.(Hort.) 4 and 5 years and B.Sc. (Fty.) 4 year programmes through Entrance Examination to be conducted at **Solan** and **Palampur** on 22.6.1997. The last date for receipt of application form for these programmes without late fee is 20.5.1997 and with late fee is 5.6.1997.

Note:- In B.Sc.(Hort.) and B.Sc. (Fty.) 4 year programmes, 15% seats shall be filled separately through the ICAR on the basis of All India Entrance Examination.

a) **Eligibility for B.Sc. (Hort.) & B.Sc.(Fty) 4 year programmes**

10+2/equivalent examination with English, Physics,Chemistry, and Biology/Mathematics/Agriculture of a recognised Board/University with a minimum of 50% aggregate marks in the above subjects. The candidates appearing in 10+2/equivalent examination with above subjects are also eligible to sit in the Entrance Examination.

b) **Eligibility for B.Sc.(Hort.) 5 year programme**

10+2 with English and Vocational Courses in Horticulture/Food Preservation and Processing from only H.P.Board of School Education with a minimum of 50% aggregate marks in the above subjects. The candidates appearing in 10+2/equivalent examination with above subjects are also eligible to sit in the Entrance Examination.

II. **Master's Programme**

The last date for receipt of admission form for M.Sc. in respect of the following disciplines without late fee is 28.6.1997 and with late fee is 5.7.1997. The interview will be held on 11.7.1997.

a) **College of Horticulture**

Pomology, Postharvest Technology, Vegetable Crops, Fruit Breeding & Genetic Resources, Entomology & Apiculture, Mycology & Plant Pathology, Biotechnology and Floriculture & Landscaping.

b) **College of Forestry**

Tree Improvement & Genetic Resources, Silviculture, Agroforestry, Forest Products, Soil Science & Water Management, Agriculture Economics, Agriculture Statistics and Microbiology.

Note :- i) Admission in Agroforestry will be for inservice candidates and in case inservice candidates are not available the seats will be opened for fresh candidates.

ii) 25% of the total seats in M.Sc. Programme are to be filled up through an All India Entrance Examination to be conducted by the ICAR.

Eligibility

B.Sc.(Fty)/(Hort.)/(Agr.) 4 year programmes/B.Sc with an OGPA of 5.50/10.00 (2.40/4.00) or its equivalent under course credit system or 55% marks under annual system from a recognised University. In addition graduates in Animal Husbandry and Economics/Economics and Mathematics/Statistics are also eligible for M.Sc. Agroforestry and Agriculture Economics, respectively.

INFORMATION REGARDING FELLOWSHIP/STIPEND/RESERVATION OF SEATS, Etc.

As per details in the University Prospectus.

PROSPECTUS CUM APPLICATION FORM for admission alongwith the schedule of the dates of Entrance Test/Interview will be available from the Registrar, Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni (Solan)HP 173230 after 15.3.1997 on payment of Rs. 50/- in cash at counter or by sending bank draft worth Rs. 60/- payable at State Bank of Patiala, Khaltoo (code No.279) in the name of the Comptroller of this University. The Prospectus shall also be available for sale at the University Sale Centre at Solan (near children park) on cash payment.

Note :- i) No separate letter will be issued for interview to the candidates seeking admission in M.Sc.

ii) No T.A./D.A. is admissible.

S C NEGI
REGISTRAR

NATIONAL INSTITUTE OF FOUNDRY AND FORGE TECHNOLOGY

HATIA : RANCHI-834 003
(A Govt. of India Society Under Ministry of HRD)

ADMISSION NOTIFICATION-1997

1. **B.Tech (Manufacturing Engg.) 4 years Degree Course.**
2. **M. Tech (Manufacturing Engg.) P. G. Degree Course.**
3. **M.Tech (Foundry-Forge Technology) P.G. Degree Course.**
4. **Advanced Diploma in Foundry/Forge Technology - 18 months duration.**

ELIGIBILITY :

1. B. Tech. (Mfg. Engg.) : 10+2 Stage of 10+2+3 System Or equivalent with Physics, Chemistry, Maths and English.

   Maximum Age Limit : 21 years as on 1.10.97 (relaxable by 5 years for SC/ST).
2. M.Tech. (Mfg. Engg.) Bachelor's degree in Mech./Met./Manufacturing/Prodn./Electrical/ Aeronautical/Chemical/Industrial Engg. with valid GATE score.
3. M.Tech. (Foundry-Forge Tech.) : Bachelor's degree in Mech./Met./Prodn.Engg. or equivalent with valid GATE score. (for 2 & 3 sponsored candidates who are not qualified at the GATE may also be considered provided they have secured 55% marks in qualifying examination and have 2 years relevant experience. Preference will be given to sponsored candidates who are GATE qualified. *However, sponsored candidates will not be eligible to receive scholarship*).
4. Advanced Diploma (Foundry/Forge Technology) :
   Passed diploma in Met./Mech./Prodn. Engg. conducted by State Board of Technical Education OR B.Sc. with Physics, Chemistry & Mathematics.

APPLICATION FORM & INFORMATION BROCHURE:

Application forms and other details may be obtained from the Chairman, Academic Affairs, NIFFT, RANCHI-834 003 on payment of following fee by crossed Demand Draft from any Nationalised Bank payable to '**NATIONAL INSTITUTE OF FOUNDRY & FORGE TECHNOLOGY**' at **Ranchi**, alongwith a self addressed envelope of size 28x16 cm stamped for Rs. 6/- only, indicating the name of the course applying for. These may also be obtained from the Institute on working days between. 9.00 AM to 5.00 PM on payment of fees by Demand Draft. The Institute will not be responsible for any postal delay/loss.

APPLICATION FEE :

1	B. Tech. (Mfg. Engg.)	-	Rs. 300/- (Rs. 120/- for SC/ST)
2.	M.Tech. (Mfg Engg.)	-	Rs. 150/- (Rs. 60/- for SC/ST)
3	M. Tech. (Foundry-Forge Tech.)	-	Rs. 150/- (Rs. 60/- for SC/ST)
4.	Advanced Diploma Course (Foundry/Forge Tech.)	-	Rs. 200/- (Rs. 80/- for SC/ST)

Requests of SC/ST candidates for application form must be accompanied by caste certificate alongwith application fee.

SCHOLARSHIP :

M. Tech. students (non sponsored) : Rs 2500/- per month subject to rules.
Advanced Diploma Students : Rs. 450/- per month.

Seats are reserved for SC/ST Candidates for all the courses as per rules. Candidates appearing at the qualifying examination may also apply. However, if selected they will be required to produce the qualifying examination result by the end of September 97.

LAST DATES:

(a) For B. Tech. & Advanced Diploma Courses :
Issue of Application forms .... **By post : 21-04-97**
From Institute Counter .... **By hand : 25-04-97**
Receipt of completed application forms **08-05-97**
(b) For M. Tech. Courses : The last date
for receipt of completed application forms **06-06-97**

ENTRANCE EXAMINATION AT MUMBAI, DELHI, MADRAS, HYDERABAD, CALCUTTA AND RANCHI

i. Advanced Diploma (Foundry/Forge Tech.) on 07-06-97 (SATURDAY)
ii. B. Tech. (Manufacturing Engineering) on 08-06-97 (SUNDAY)

RHIZ/NIFFT/97

MAHATMA PHULE KRISHI VIDYAPEETH,

RAHURI, DIST:AHMEDNAGAR
(MAHARASHTRA STATE)
(PIN. NO. 413722)

GRAM:- KRISHIVID.

NO. ADVT/EST-A-B/97/547/OF 1997

Dated:- 3rd March, 1997.

ADVERTISEMENT

Applications in the prescribed form are invited for filling the posts under 'SPECIAL DRIVE' and GENERAL POSTS' so as to reach Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar, (Maharashtra State), 413722, on or before **17.4.1997**

POSTS UNDER SPECIAL DRIVE

Sr. No.	Name of post	Total No. of posts	Reservation		
			SC	ST	DT/NT (A, B, C, D)
1	2	3	4	5	6
	Associate Professor/ equivalent posts.	(Pay Scale Rs. 3700-125-4950-150-5700)			
1.	Agronomy	1	-	1	-
2.	Agri. Chem. & Soil Sci.	2	1*	1	-
3.	Agril. Botany	2	1	1	-
4.	Agril. Entomology	1	1	-	-
5.	Plant Pathology	1	-	1	-
6.	Ani. Sci. & Dairy Sci.	2	-	1	1(A/B)
7.	Agril. Economics	1	-	1	-
8.	Horticulture	1	-	1*	-
9.	Agril. Extension	1	-	1	-
10.	Agril. Engineering.	2	-	1	1 (A/B)
	Assistant Professor & Equivalent Posts.	(Pay Scale : Rs. 2200-75-2800-100-4000)			
11.	Agronomy	2	-	1* 1	-
12	Agril. Chemistry & Soil Sci.	2	1	1*	-
13.	Biochemistry	1	1	-	-
14.	Agril. Botany	3	1	1* 1	
15.	Agril. Entomology	2	1* 1	-	-
16.	Plant Pathology	2	1*	1*	-
17.	Ani. Sci. & Dairy Science	2	1*	1	-

1	2	3	4	5	6
18.	Agril. Economics	1	-	1	-
19.	Horticulture	2	1	1	-
20.	Agril. Extension	1	1	-	-
21.	Agril. Engineering	3	1	1	1 (A/B)
22.	Vety. Science	2	1	1	-
23.	Vety. Phy. & Bio-Chemistry	1	1	-	-
24.	**Physical Training Instructor** (Pay Scale - *Rs.2200-75-2800-100-4000)*	2	-	1	1 (A/B)
25.	**Assistant Registrar/Asstt. Comptroller.** (Pay scale-Rs.2200-75-2800-EB-100-3700)	2	1	1*	-
	Senior Research Assistant in	(Pay scale:- Rs.1640-60-2600-EB-75-2900/-)			
26	Agronomy	4	2	2	-
27.	Agril. Botany	6	3	3	-
28	Agril. Entomology	4	2	1	1 (A/B)
29.	Plant Pathology	4	2	2	-
30	Horticulture	3	1	1	1 (A/B)
31.	Animal Science & Dairy Science	2	1	1	-
32	Agril. Engineering	1	1		-
33.	Food Science & Technology	1	1	-	-
34	Agril Economics	2	1	1	-
35	Veterinary Officer (Pay scale . Rs 2000-60-2300-EB-75-3200-100-3500)	1	1	-	-
	Junior Research Assistant in	(Pay scale :Rs.1400-40-1600-50-2300-EB-60-2600)			
36	Agronomy	4	-	4	-
37.	Agril Botany	3	-	3	-
38	Agril. Chemistry & Soil Science	1	-	1	-
39.	Horticulture	2	-	2	-
40	Agril. Extension	1	-	1	-
41	Statistics	1	-	1	-
42.	**Office Superintendent** (Pay scale: Rs. 2000-60-2300-EB-75-3200-100-3500)	1	-	1	-
43.	**Stenographer** (Lower Grade) (Pay scale : Rs. 1640-60-2600-EB-75-2900)	1	-	1	-
44.	**Foreman/ Supervisor** (Pay scale :- Rs. 1400-40-1800-EB-50-2300)	1	1	-	-
45.	**Audio Visual Operator** (Pay scale :- Rs. 1200-30-1440-EB-30-1800)	2	1	1	-
46.	**Artist-Cum-Photographer** (Pay scale:- Rs. 1400-40-1800-EB-50-2300)	1	1	-	-
47.	Maistry (Civil) (Pay scale:- Rs. 950-20-1150-EB-25-1400)	3	1	1	1 (A/B)

GENERAL POSTS

Sr. No.	Name of post	Total No. of posts	Reservation					
			SC	ST	DT/NT (A,B,C,D)	OBC	SBC	Open
1	2	3	4	5	6	7	8	9
	Associate Professor & equivalent posts	(Pay scale: Rs. 3700-125-4950-150-5700)						
48.	Agronomy	4	-	1	1(A) (p)	-	-	2(p)
49.	Agril. Chemistry & Soil Science.	3	1(p)	-	-	-	-	2
50.	Agril. Botany	5	1(p)	1	1(A)	-	-	2(1p)
51.	Agril. Entomology	1	-	-	-	-	-	1
52.	Plant Pathology	2	1(1p)	-	-	-	-	1(p)
53.	Animal Science & Dairy Science	3	1	-	-	-	-	2(1p)
54.	Agril. Economics	2	1	-	-	-	-	1
55.	Horticulture	2	1	-	-	-	-	1
56.	Agril. Extension	1	1(p)	-	-	-	-	-
57.	Agril. Engineering	2	1	-	-	-	-	1
58.	Vety.Phy. & Bio-Chemistry	1	-	-	-	-	-	1
59.	Physics	1	-	-	-	-	-	1
	Assistant Professor & equivalent posts.	(Pay scale :-Rs. 2200-75-2800-100-4000)						
60.	Agronomy	6	2(1p)	-	1(A)	-	-	3(1p)
61.	Agril. Botany	2	1(p)	-	-	-	-	1(p)
62.	Agril Entomology	3	-	1	-	-	-	2(1p)
63.	Plant Pathology	1	-	-	-	-	-	1(p)
64.	Animal Science & Dairy Science	1	-	-	-	-	-	1(p)
65.	Agril. Extension	1	-	-	-	-	-	1(p)
66.	Agril. Engineering	3	1	-	-	-	-	2(1p)
67.	Vety. Anatomy	1	-	-	-	-	-	1
68.	Vety. Ani. Production	1	-	-	-	-	-	1
69.	Vety. Microbiology	1	-	-	-	-	-	1
70.	**College Librarian** (Pay scale:-Rs. 2200-75-2800-100-4000)	1	-	-	-	-	-	1
71.	**Assistant Registrar/ Assistant Comptroller.** (Pay scale:-Rs. 2200-75-2800-EB-100-3700)	1	-	-	-	-	-	1
	Senior Research Assistant	(Pay scale :- Rs. 1640-60-2600-EB-75-2900)						
72.	Agronomy	3	1(p)	1(p)	-	-	-	1(p)
73.	Horticulture	2	1(p)	-	-	-	-	1(p)
	Junior Research Assistant	(Pay scale:-Rs. 1400-40-1600-50-2300-EB-60-2600)						
74.	Agronomy	7	1	1	-	2	1	2
75.	Agril. Botany	7	1	2	-	2	1	1
76.	Agril. Chemistry & Soil Science	5	1	1	1(A)	-	-	2
77.	Agril. Entomology	1	-	1	-	-	-	-
78.	Plant Pathology	2	1	1	-	-	-	-
79.	Horticulture	2	1	1	-	-	-	-
80.	Agril. Extension	3	-	1	2 (1-A, 1-B)	-	-	-
81.	Veterinary Science	1	-	-	-	-	-	1

1	2	3	4	5	6	7	8	9
82.	**Agricultural Assistant** (Pay scale:- Rs.1200-30-1440-EB-30-1800)	63	7	6	9 (3-A,2-B, 2-C, 2-D)	10	2	29
83.	**Office Supdt.** (Pay scale :- Rs. 2000-60-2300-EB-75-3200-100-3500)	3	1	-	-	-	-	2
84.	**Assistant Superintendent** (Pay scale:- Rs. 1640-60-2600-EB-75-2900)	6	1	1	1(A)	-	-	3
85.	**Junior Engineer (Mechanical)** (Pay scale:- Rs. 1400-40-1800-EB-60-2300 (Diploma Holder) :- Rs. 2000-60-2300-EB-75-3200 (Degree Holder)	1	-	-	-	-	-	1
86.	**Foreman/Supervisor** (Pay scale :- Rs. 1400-40-1800-EB-50-2300)	1	-	-	-	-	-	1
87.	**Artist-cum-Photographer** (Pay scale:- Rs. 1400-40-1800-EB-50-2300)	2	1	-	-	-	-	1

Note : (A) :- The posts marked as '*' are for exchange of point from SC to ST and vice-versa only.

(B) :- (p) = Probable.

DETAILS OF POST/S ADVERTISED

POSTS AT SR. NO. 1 TO 10 & 48 TO 59 : Asso.Prof./equivalent posts

QUALIFICATIONS:- Ph.D. in respective subject with five years experience in teaching, research or extension education of which two years should be in the cadre of Assistant Professor or its equivalent

OR

Master's degree in respective subject with seven years experience in teaching, research or extension education of which three years should be in the cadre of Assistant Professor or its equivalent.

POSTS AT SR.NO.11 TO 23 & 60 to 69:- Asstt. Prof./equivalent posts

QUALIFICATIONS:- Ph.D. degree in respective subjects or Master's degree in the respective subject with two years experience in teaching, research or extension education.

POSTS AT SR.NO.24:- Physical Training Instructor

QUALIFICATIONS:- Must possess the minimum qualification of a postgraduate Diploma or certificate or a degree in Physical Education.

POSTS AT SR.NO.70:- College Librarian

QUALIFICATIONS:- First or second class B.A./B.Sc./B.Com. degree plus a first class or second class M.Lib.Sci. Degree.

OR

First or second class M.A./M.Sc./M.Com. degree and first class or second class B.Lib.Sci. or a diploma in Library Science.

POSTS AT SR.NO. 25 & 71 Asstt. Registrar/Asstt.Comptroller

QUALIFICATIONS:-

(i) Bachelor's degree in any Faculty of Statutory Universities. Preference may be given to candidates having IInd Class,

(ii) have worked in a responsible administrative/financial position executive capacity in local body or in an Industrial or a commercial undertaking/Govt. and/University/Semi Govt. organization for at least 3 years, not below the post in the scale of Rs. 2000-3500.

Preference will be given to candidate who is well conversant with Govt./University Services Rules, establishment matters, budgeting, accounting, office procedure, etc.

POSTS AT SR.NO. 26 TO 34 & 72 TO 73 :-

QUALIFICATIONS :- Master's degree in the respective subject,

OR

Bachelor's degree in 1st Class with Distinction. At least IInd Class Bachelor's degree with three years experience as Junior Research Assistant or its equivalent.

POST AT SR. NO. 35:- Veterinary Officer

QUALIFICATIONS:- M.V.Sc., *OR* B.V.Sc. First Class with Distinction *OR* B.V.Sc., IInd Class, with three years experience.

POSTS AT SR. NO. 36 TO 41& 74 TO 81:- Junior Research Assistant

QUALIFICATIONS :- Bachelor's degree in the respective faculty.

POSTS AT SR. NO. 42 & 83 :- Office Superintendent

QUALIFICATIONS:-

1. A Bachelor's Degree of any statutory University. Preference will be given to the candidates having degree in IInd Class;
2. Five Years experience in the office under the State Govt./Semi Govt. Organization/Educational Institution/Corporation/Cooperative organization of which at least three years experience should be not below the rank of Assistant Superintendent/five years experience of Senior Clerk.

POST AT SR. NO. 43:- Stenographer (Lower Grade)

QUALIFICATIONS:-

1. Secondary School Certificate or its Equivalent Examination.

2. Possess Government Commercial Certificate for a speed of 100 w.p.m., in English and Marathi Shorthand, and 40 w.p.m. in English and 30 w.p.m. in Marathi Typing.

POSTS AT SR. NO. 82 :- Agril. Assistant

QUALIFICAIONS :- Bachelor's degree in Agriculture or Horticulture OR Forestry OR Two years certificate course in Agriculture recognised by Agril. University.

POST AT SR. NO. 84 :- Assistant Superintendent

QUALIFICATIONS :-

1. A Bachelor's degree of any statutory University. Preference will be given to the candidates having IInd Class,
2. Three years experience in the office under State Govt. / a large educational institute/reputed Semi. Govt. Organization/Public (Ltd). Companies/Co-operative Organization/ Corporation.

POST AT SR. NO. 44 & 86 :- Foreman Supervisor

QUALIFICATIONS:- B.Tech. (Agril.Engg.)

OR

Diploma in Mech.Engg./Electrical Engineering with two years experience.

POST AT SR. NO. 45 :- Audio Visual Operator

QUALIFICATIONS:-

1. Who have passed S.S.C. or its equivalent Examination with English and have passed wireman Examination at least in IInd Class &
2. who have minimum two years experience of handling and operating projector and public addressing equipment. However, preference will be given to those who have diploma of handling and operating S.S.V. film and slide projector.

POST AT SR. NO. 46 & 87 :- Artist-cum-Photographer

QUALIFICATIONS:-

1. Diploma in Commercial Art or Drawing and Painting in Art of a recognised Institution.
2. Must possess a certificate in Advanced Photography technique/art work.

POST AT SR. NO. 47:- Maistry (Civil)

QUALIFICATIONS:- I.T.I. certificate in concerned trade from Government recognised Institute.

POST AT SR. NO. 85:- Junior Engineer (Mechanical)

QUALIFICATIONS:-

(A) Degree in following subjects from Govt. recognised Institute/University.

1. B.E. (Automobile)
2. B.E. (Industrial)
3. B.E. (Production)

(B) Diploma in following subject from Maharashtra Technical Board of Examination in Mechanical

OR

1. Automobile Engineering,
2. Production Engineering,
3. Production Technology.

AGE LIMIT

As limit as on 17-4-1997 for the posts at Sr. No. 1 to 10 and 48 to 59 (Associate Professor and its equivalent posts) not above 40 years, for the posts at Sr.No. 46, the age limit is 35 years and maximum age limit is not applicable who are already in Govt. service.

AND

for remaining posts not below 18 years and above 30 years.

The maximum age limit is relaxable by five years in respect of the persons belonging to reserved categories.

The maximum age limit is not applicable to the persons already on the regular establishment of this University.

Physically Handicapped Persons :

The upper age limit prescribed for recruitment is relaxable upto 45 years in case of Physically Handicapped persons, if they are, otherwise suitable and have necessary capacity to perform the duties of the posts.

Freedom Fighter :

The maximum age limit is relaxable by five years for Freedom Fighters and their nominee, and this relaxation is applicable to the persons belonging to the reserved categories in addition to the Maximum age limit prescribed for the reserved categories.

Ex-Service Men :

The age limit for the Ex-service men, who have put in not less than six months continuous service in the Armed Forces are allowed to deduct from their age the length of continuous service in the Armed Forces plus three years. In case of disabled Ex-service men, the age limit is relaxed *upto 45 years for Class III Posts.*

The Ex-service men should submit their applications through the respective District Sainik Board.

The reservation/preference as prescribed by the Government will be given to the University Project Affected Persons/ Ex-Service men/Physically Handicapped Persons/Earthquake affected persons/ Freedom Fighters and Apprentice Candidates from the unreserved posts in Class III cadres

The reservation of 30% for female candidate will be considered in respective categories.

HOW TO APPLY

Prescribed application forms are available with the Registrar, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar (PIN-413 722) for sale on working days from 10.00 hrs to 16.00 hrs, on sending a self addressed envelope (11" x 5") with postage stamp/s of Rs. 2/- and crossed Indian Postal Order/s of the value of Rs.150/- payable to the Comptroller, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar Money order/ Cash/Cheque/Demand Draft will not be accepted. Application form duly filled in, in all respects, should reach this office on or before *17-4-1997*. Persons applying from outside India, may apply on plain paper, giving full details regarding their age, qualifications, experience etc., payment of application fees will not be necessary in their cases. However, if such candidates are selected, they will have to complete all the formalities.

OTHER DETAILS

1. **Persons belonging to the reserved categories should send crossed Indian Postal Order of the value of Rs. 75/- only. They should produce certified true copy of the Caste Certificate issued by the competent government authority.**

2. Candidates belonging to the NT(C), NT(D) and other Backward Class categories, who desire to be excluded from the "CREAMY LAYER" should produce the relevant certificate in prescribed form issued by the Competent Government Authority as per the Government Resolution in Social Welfare, Cultural Affairs and Sports Department No.CBC-1094/Pra-Kra-86/Mavaka-5, dated 16.6.94.
3. The posts earmarked for the reserved categories are only for those categories specified by the Government of Maharashtra, from time to time.
4. There is a possibility of increase/decrease in the number of posts advertised. Similarly the posts advertised for the reserved categories can be increased or decreased if the roster points are changed.
5. Selected candidates can be posted/transferred at any of the campuses under the jurisdiction of this University. So also the rules framed in this regard from time to time will be binding on them.
6. Nomenclature of post can be changed as and when need arises.
7. Persons working in other than this University should produce "No Objection Certificate" from their present employer at the time of interview, even though their application is received through proper channel.
8. Persons who are already in the service of State Government/Semi Government etc., must apply though proper channel. They should send an advance copy of the application directly to this University on or before 17.4.1997. The application sent through proper channel must reach this office on or before 2-5-1997. The application received directly and beyond closing date will not be entertained.
9. The applicant should satisfy all the requirements i.e. educational qualifications, age, experience etc., on or before 17-4-1997.
10. The University reserves its right to fill or not to fill any of the vacancies advertised. So also the University reserves its right to give or not to give an appointment to the candidate recommended by the Selection Committee. It will depend upon the situation prevailing at the time of appointment.
11. Incomplete applications and applications received after closing date will not be entertained. So also correspondence in this regard will not be made. Any application as enclosure of Certificate/Document to the original application received by the Registrar, Mahatma Phule Krishi Vidyapeeth, Rahuri, will not be entertained on any ground.
12. The posts sanctioned in the Indian Council of Agril. Research and other Schemes are *temporary* but likely to be continued. The persons appointed on such posts will be continued in the service till the post is continued by the I.C.A.R./Government funding agency. In case the post is discontinued the University reserves the right to terminate services of the concerned staff.
13. Separate application should be made for each post.
14. The candidate has to appear for interview, if called, at his own cost without travelling allowance and D.A.
15. Mere eligibility of a Candidate will not vest any right in person for calling for interview. The University reserves the right to call or not to call for interview.
16. The University will not be responsible for postal delay.
17. Candidate should enclose true copies/xerox copies of the relevant certificates duly attested, failing which their application will be rejected. Original documents should not be enclosed with the application.
18. Documentary evidence for age, caste (for reserved category) educational qualification, experience etc., indicated in the application should invariably be produced, failing which the application will be rejected.
19. If necessary, there will be a written test of the candidates applying for the Class III posts.
20. Applications for the prescribed forms should have a clear mention of the Sr.No., the Post and Category.
21. Candidate applying for the post of Senior Research Assistant/Junior Research Assistant should indicate name of the discipline to which he/she desires to apply. Separate application should be submitted for each discipline failing which the application will be rejected. A candidate/s selected as a Junior Research Assistant in a particular discipline will not be allowed to change discipline on the grounds that he/she has acquired postgraduation in other discipline.
22. Canvassing in any form will completely disqualify a candidature for employment.
23. Applicants who have applied in the past for these posts should apply afresh as per this advertisement.

D.K. Jagdale
REGISTRAR

SHAHEED BHAGAT SINGH COLLEGE OF ENGINEERING & TECHNOLOGY

P.BOX NO. 20, MOGA ROAD,
FEROZEPUR - 152001
(Established by the Punjab Govt.)

Advertisement No. 6 (1997)

Applications are invited for the following posts for Shaheed Bhagat Singh College of Engineering & Technology, Ferozepur. The college is registered as a Society under the Societies Registration Act, 1860. The college is fully funded by the Punjab Government. The posts carry D.A. and other allowances as admissible under the college Bye-Laws. Application should be submitted on *prescribed form obtainable from the office of the Principal.* Write clearly on the top of the envelope the name of the post and department for which you are an applicant. The completed application form accompained by all relevant documents should reach the office of the Principal **upto April 11, 1997.**

1. **PROFESSOR (08): General-04, SC/ST-03 & Ex-serviceman-01):**
   Pay Scale : Rs. 4500-7300.

a.	Production Engg.	01
b.	Industrial Engg.	01
c.	Computer Science and Engg.	01
d.	Chemical Engg.	01

e.	*Materials Engg.	01
f.	Applied Physics	01
g.	Applied Chemistry	01
h.	Applied Mathematics	01

Essential Qualifications : Ph.D. with first class bachelor's or master's degree in engg./technology OR Ph.D. degree with first class bachelor's or master's degree in appropriate branch for teaching posts in Humanities and Sciences.

Experience : Ten years distinguished experience in teaching/industry/research out of which five years must be at the level of Assistant Professor or equivalent. Candidates from Industry/profession with professional work of high standard recognised at national/international level equivalent to Doctorate would also be eligible.

2. **ASSISTANT PROFESSOR : (16) (General - 06, SC/ST-06, Ex-serviceman-03 & BC-01): Pay Scale : Rs. 3700-5700.**

Essential Qualifications : Ph.D. in appropriate branch with first class master's degree in case of teaching posts in sciences OR first class in master's degree in appropriate branch of engg./technology.

Experience : Five years experience in teaching/industry/research at the appropriate level.

a.	Mechanical Engg.	02
b.	Production Engg.	02
c.	Industrial Engg.	02
d.	Computer Science & Engg.	02
e.	Chemical Engg.	02
f.	*Materials Engg.	02
g.	Applied Physics	01
h.	Applied Chemistry	01
i.	Applied Mathematics	02

3. **LECTURER : (12) (General -01, SC/ST-03, Ex-serviceman-06, & BC-02) Pay Scale Rs. 2200-4000.**

a.	Mechanical Engg.	03
b.	Production Engg.	02
c.	Industrial Engg.	01
d.	Computer Science & Engg.	03
e.	Chemical Engg.	01
f.	*Material Engg.	02

Essential Qualifications: First class bachelor's degree in appropriate branch of engg./technology.

*Candidate holding requisite qualification in the specialisation of Materials Engg./Metallurgy/Polymer Science/Ceramics are eligible to apply for all the categories of post in Materials Engg.

4. **SYSTEM ANALYST : (General - 01) : Pay Scale : Rs. 3700-5700.**

Essential Qualifications: First class in master's degree in computer science & engg./computer engg. and having undergone a training course/diploma in System Analysis.

Experience : Five year experience in teaching/industry/research at the appropriate level.

General requirement for all the posts:

a) Apply on separate application form for each post together with complete documents.

b) Prescribed application form is obtainable from the office of the Principal by sending crossed D.D. of Rs. 30/- favouring Principal, SBSCET, and payable at Ferozepur. For SC/ST/Ex-serviceman categories a D.D. of Rs. 15/- is required. Request for application form must be accompanied by D.D. of the required amount and a stamped (with Rs. 2/- postal stamps) self addressed envelope of size 23x10cm. Write clearly the name of the post for which you are an applicant on the top of the said envelope.

c) In case suitable candidates belonging to reserved categories are not available the posts will be filled with suitable candidate from the open category.

d) Candidates in government/semi-government service should apply through proper channel. An advance copy of prescribed from alongwith attested copies of certificates/supporting documents. 'No Objection Certificate' should be produced at the time of interview. Self attestation of document is not acceptable.

e) Number of posts can be varied at the time of interview.

R.C. Bahl
PRINCIPAL

VAIKUNTH MEHTA NATIONAL INSTITUTE OF COOPERATIVE MANAGEMENT (VAMNICOM)
University Road Pune [illegible]

ADMISSION NOTICE

POST GRADUATE DIPLOMA IN BUSINESS ADMINISTRATION (COOPERATION) 1997-99

(Recognised by All India Council for Technical Education, Govt. of India)

VAMNICOM of NCCT - NCUI, an Apex Cooperative Management Institute aided by the Government of India, to impart training and education and undertake research and consultancy in the field of Co-operative Business Management, invites applications in the prescribed proforma for admission in Two Year Full Time Residential Course 'Post-Graduate Diploma in Business Administration (Coop.)' commencing from 14th July 1997. The Prospectus & application form can be obtained by sending a D.D. for Rs. 215/- in favour of the **Director, VAMNICOM, Pune** or by paying cash of Rs. 200/- at the office.

ELIGIBILITY :

i) Graduate / Post Graduate in any discipline from a recognised University from India / Abroad with atleast 50% marks (45% for SC / ST).

ii) Students appearing in forthcoming degree examinations can also apply.

iii) No Entrance Test for foreign and NRI students.

UNIQUENESS :

i) An MBA Course which offers a programme-mix suited to meet the *management needs of Cooperative, Corporate and Public Sector* enterprises alike. An MBA Plus Programme, which includes subjects like Entrepreneurship Management, Agri-business Management, International *Trade, Computer Applications and MIS.*

ii) Exposure to current global economic issues, advanced teaching techniques i.e. case studies, role plays, management games and skill development through on-the-job-summer training & final placement services.

iii) Highly qualified and experienced Core and Associate faculty from Management schools.

iv) The course is accredited to the Institute of Chartered Financial Analyst of India (ICFAI), *for its CFA-MBA programme.*

v) Last year placement highly successful.

SCHOLARSHIPS : Scholarships available for meritorious and deserving candidates instituted by President NCUI.

LAST DATE FOR APPLICATION : *Indian Students* - By Post - 12/5/97, By hand - 26/5/97, *Foreign and NRI Students* - 10/6/97.

SELECTION CRITERION : Written Test on GMAT pattern, G.D. & Viva on 28/5/97 & 29/5/97 at Pune. Examination could also be conducted at Regional centres like Delhi, Bangalore and Calcutta depending on the response.

B.D.SHARMA, Director

AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN

(DEEMED UNIVERSITY)
COIMBATORE-641 043

NOTIFICATION

Wanted Qualified Women for the following posts :

1. **Professors** : Business Administration (1)
   Computer Science (2) and
   Special Education (1)
   (SC-1, BC-2, OC-1)
2. **Readers** : Business Administration (1) and
   Computer Science (2)
   (MBC-1; OC-2)

The minimum qualifications prescribed for the posts are as under :

1 **Professors** (a) Master's Degree in the relevant subject with not less than 55% marks or equivalent Grade; (b) Ph.D. Degree in the subject or related subject; (c) published work of high quality; (d) Engaged in research with 10 years experience in postgraduate Teaching and/or Research at the University/National Level Institutions, including experience of guiding research at Doctoral level.

2. **Readers** : As in S.No. 1 and a, b and eight years experience of teaching and/or research, of which a maximum three years could be, work for research degree).

Note : Salary - pay as per UGC scales and allowances at Tamilnadu Government rates. Candidates with M.E./M.Tech. in Computer Engineering, Electrical and Electronic and Communication Engineering with the qualifications as in Sl.No.1(b), (c) and (d) can also apply for the post of Professor or Reader in Computer Science. **Retired persons and Men** also can apply for the posts in Computer Science and Business Administration.

Application forms can be had from the Registrar on payment of Rs. 20/- by cash or by post on payment of Rs. 20/- by Demand Draft. drawn in favour of the Registrar, Avinashilingam Deemed University on Indian Bank, payable at Coimbatore-641 043 together with a self-addressed and stamped envelope for Rs. 3/-. The filled in application form with necessary enclosures must reach the Registrar within **three weeks** from the date of publication of this notification.

Those who are in service should route their application through proper channel.

Date : 6-3-97 **REGISTRAR**

Devi Shreevani Education Society's

MAHADEVRAO SALGAOCAR COLLEGE OF LAW

MIRAMAR, P.O. CARANZALEM,
PANAJI, GOA, 403 001.

REQUIRES

1. Full-time lecturers in law 2 posts (One reserved for Schedule castes and

---

National Museum Institute of History of Art, Conservation and Museology

Janpath, New Delhi-110011

Applications are invited for filling up the following posts in the Institute.

1. **Professor (History of Art)** — leave vacancy (scale Rs. 4500-7300) initially for one year.

Essential Qualifications : An eminent scholar with published work of high quality, actively engaged in research with 10 years experience in post graduate teaching and/or research at University/National level Institutions including experience of guiding research at doctoral level in History of Art.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge in History of Art.

Age Limit - *55 years or below (relaxable by the competent authority as per rules)* for direct recruitment only.

Method of Recruitment:

By direct recruitment failing which transfer on deputation or short term contract of persons from Universities/Colleges Central/State Museums or any similar Institutions.

2. **Confidential Assistant** :- One, (scale Rs. 2000-3500).

Educational and other qualifications for direct recruitment.	**Essential** (a) B.A. degree or equivalent from a recognised University. (b) 7 years experience of working with Head of Department of major government institutions, requiring handling of confidential documents.
Method of recruitment	By promotion from the employees of Institute failing which by transfer on deputation failing which by direct recruitment. 1) At least 3 years regular service in *the scale of Rs.1640-2900/- or* 2) 7 years regular service in the scale of Rs. 1400-2600/-.
Age limit	30 years (relatable upto 5 years for SC/ST & 3 years for OBC) for direct recruitment only.

The application on plain paper giving full details of name, date of birth, mailing address, whether belonging to SC/ST/OBC, Educational Qualifications & Experience in details alongwith proof of published/research work (for post at Sl. No.1) and application fee of Rs. 50/- incase of post at Sr. 1 & Rs. 20/- incase of post at Sl. No. 2 in form of demand draft payable to NMIHACM at any Nationalized Bank of Delhi, should reach the Registrar, National Museum Institute (Deemed University), Janpath, New Delhi-110011 **within 20 days** from the date of publication of this advertisement. *Persons already in employment should send their application through proper channel.*

REGISTRAR

davp 1151(4)96

one General).

2. **Qualification :**

(a) Good academic record with atleast 55% marks or an equivalent at Master's Degree in the subject of Law from an Indian University or an equivalent degree from a foreign University.

(b) The candidates should have cleared the eligibility test for lecturers conducted by U.G.C. or similar test accredited by the U.G.C.

OR

Passed M.Phil Degree or has been submitted Ph.D. thesis on or before 31.12.1993.

3. **Desirable**

(a) Postgraduate degree in Arts subjects like Political Science, Economics, History etc.

(b) Teaching experience in Five Years Law Degree Course.

4. Pay scales, allowances and other service condition as per the rules, Ordinances, Statutes of Goa University, U.G.C. and rules of Goa Government.

Candidates should account for break if any, in the academic career. Those already in service must send their application through proper channel. Complete applications in all respects along with attested Xerox copies of Marklists for all public examination from S.S.C. and onwards, Caste certificate if belonging to SC issued by competent authority, should reach the Principal **within 15 days** from the date of publication of this advertisement.

PRINCIPAL

INSTITUTE FOR SOCIAL AND ECONOMIC CHANGE

DR. V K R V RAO ROAD,
NAGARABHAVI P O,
BANGALORE 560 072

ADVT NO. 1/18/321

Applications are invited for the following posts :

1. **Professor of Economics** - Two posts

2. **Assistant Professor Economics** - One post (leave vacancy, upto 31st Jan. 1998)

3. **System's Manager** - One post

4. **Technical Assistant** (SC / ST) - One post

Essential Qualification :

Post 1 : a) Master's degree in the subject with 50% marks in the aggregate;

b) Ph.D. or published work of equivalent standard in the subject;

c) 10 years teaching and / or research experience in the subject;

d) Publications in the subject.

Post 2 : a) Master's degree in the subject with 50% marks in the aggregate;

b) Ph.D. or published work of equivalent standard in the subject;

c) 3 years teaching and/or research experience in the subject;

d) Publications in the subject.

Post 3 : B.E. (Electronics & Communications) or B.E. (Electrical & Electronics) or M.Sc. (Physics) with exposure to computers.

Post 4 : Diploma in Electronics or Computers.

Desirable Qualification :

Post 1 : Research work of high quality in Industrial economics for the first post and in development planning for the second post.

Post 2 : Public Economics/Industrial Economics/Development Economics.

Post 3 : Experience in planning, installing and operating the computer system; administering network; providing access to users; operating data bases; maintaining back ups and training users and organising data entry work.

Post 4 : Experience in doing routine testing and handling trouble shooting services; assisting in bring up and maintenance of the network system.

Note : Those who have applied for post 1 in response to the earlier advertisement need not apply again.

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Post 1 : **Rs. 4500-150-5700-200-7300** (Gross salary at the minimum of the scale is Rs.10711.00)

Post 2 : Rs. 2200-75-2800-100-4000 (Gross salary at the minimum of the scale is Rs.6240.00)

Post 3 : Rs. 2200-75-2800-100-4000 (Gross salary at the minimum of the scale is Rs. 6240.00)

Post 4 : Rs. 1720-40-1800-50-2300-75-2900-100-3000 (Gross salary at the minimum of the scale is Rs. 4708.00)

Age :

Normally below 50 years for post 1 and 35 years for post 2 & 3 and 30 years for post 4. Age relaxable upto 5 years in case of SC/ST candidates. No age limit in case of employees of the Institute.

The selection committee may relax qualification in exceptional cases and can also consider suitable candidates from outside the list of applicants. Higher start may be given in deserving cases according to rules.

Application forms and a copy of full advertisement can be had from the Registrar by sending a Bank Draft for Rs. 25/- for post 1, Rs. 15/- for post 2 & 3 and Rs 10/- for post 4. No application fee for the candidates belonging to Scheduled Caste and Scheduled Tribe. Last date for receipt of completed application is **31st May, 1997** for post **1** and **15th April, 1997 for posts 2, 3 & 4.**

February 26, 1997 **REGISTRAR**

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(ADVERTISEMENT NO.1/97)

Inter University Consortium for DAE Facilities (IUC-DAEF) is an autonomous institution established by the UGC, New Delhi with headquarters at Indore and

Centres at Indore, Bombay and Calcutta. IUC coordinates research/projects from scientists from all Indian Universities on major facilities like Dhruva reactor, Variable Energy Cyclotron, INDUS-1 etc. created by Department of Atomic Energy and in addition maintains supplementary research facilities at these centres. Indore and Bombay centres have supporting equipment and other research facilities like ESCA, XRD, EXAFS, SAXS and facilities for studying magnetic, dielectric and transport properties at low temperatures.

Applications are invited for the following positions in this institution :-

a) Scientist-D : Two Posts. *(1 at Bombay Centre and 1 at Indore Centre).*

Pay Scale : Rs. 3000-100-3500-125-4500. **Maximum Age limit** : Not more than 40 years as on 1.1.97. **Minimum Qualification & Experience:** A good academic record with a Ph.D.. degree and Post-Doctoral work in experimental Condensed Matter Science with research experience in (i) x-ray/neutron diffraction particularly from disordered materials or soft condensed matter (for Bombay Centre) and (ii) Physics with x-rays (for Indore Centre).

b) Engineer-D (Cryogenics): One Post *(Indore Centre)*

Pay Scale : Rs. 3000-100-3500-125-4500.

Maximum Age Limit : Not more than 40 years as on 1.1.97.

Minimum Qualification & Experience :

A good academic record with a Ph.D. degree in cryogenics/low temperature field. M.Tech./M.E. or B.E. respectively with 3 years or 5 years working experience in the field of cryogenics & low temperature physics may also be considered. Experience of working in air-conditioning units will not be relevant.

c) Administrative Officer (Accounts) : One Post. *(Bombay Centre)*

Pay Scale : Rs. 2200-75-2800-EB-100-4000.

Maximum Age Limit : 40 years as on 01.01.97.

Minimum Qualification & Experience :

The candidates must be a graduate with good knowledge of Finance, Accounts, Stores, and Govt. financial & administrative Rules & Regulations.

Preference will be given to the candidates who has passed ICAI/ICWAI examination. Minimum relevant experience of 5 years, in case of postgraduate, or of 8 years in case of graduate.

Knowledge of computers for data & word processing in necessary.

Depending on the qualification and experience, the candidate may be appointed as an Assistant Accounts Officer in pay scale (Rs. 2000-60-2300-EB-75-3200-100-3500).

d) Driver-cum-Auxiliary Staff : Two Posts *(1 at Bombay Centre and 1 at Indore Centre)*

Pay Scale : Rs. 950-20-1150-EB-25-1500.

Maximum Age Limit : 30 years as on 01.01.1997.

Minimum Qualification & Experience :

The candidate must have passed VIIIth class and should have valid licence for driving car and jeep etc. Candidates having experience of driving will be preferred.

e) Lab Attendant : One Post *(Indore Centre)* **Reserved for SC/ST**

Pay Scale : Rs. 775-12-955-EB-1025.

Maximum Age Limit : 28 years as on 01.01.97.

Minimum Qualification & Experience :

The candidate must have passed High School or Secondary or equivalent examinations and should have valid licence for doing industrial & domestic electric work. Candidates proficient in all kinds of work of low tension (LT) & high tension (HT) and electric power panel boards will be preferred. Depending on the qualification and experience, the candidate may be placed in the higher pay-scale of Rs. 950-20-1150-EB-25-1400.

f) Auxiliary Staff : One Post *(Bombay Centre)* **Reserved for SC/ST**

Pay Scale : Rs. 775-12-955-EB-1025.

Maximum Age Limit : 28 years as on 01.01.97.

Minimum Qualification & Experience :

The candidate must have passed VIIIth Class and should have experience of working in a established office.

g) Caretaker : One Post *(Indore Centre)* **Reserved for SC/ST**

Pay Scale : Rs. 975-25-1150-EB-30-1660.

Maximum Age Limit : 30 years as on 01.01.97.

Minimum Qualification & Experience :

The candidate must have passed Higher Secondary or equivalent examination and have working knowledge of English, typing and word processing. Candidate should have relevant experience of at least 3 years.

h) Security Staff : One Post *(Indore Centre)* **Reserved for SC/ST**

Pay Scale : (Rs. 950-20-1150-EB-25-1400)/(Rs.775-12-955-EB-1025).

Maximum Age Limit : 30 years as on 01.01.97.

Minimum Qualification & Experience :

The candidate must have passed High School or equivalent examination higher pay-scale and VIII class for lower pay-scale. Depending on qualification and nature of experience, the candidate may be placed in one of the two pay-scales.

Note :

1. All these posts are transferable among the Centres of this organisation.

2. Provision for employing and giving relaxation in age to SC/ST candidates as per Govt. policy.

3. Age relaxation to candidates working in this Institution/Govt. departments may be considered.

4. In addition to Basic Pay, other allowances like Dearness Allowance, H.R.A., C.C.A. etc. will be given as per rules of this Institution which are, in general, similar to the *Rules for employees of Govt. of* India.

How to apply :-

Applications giving complete bio-data typed, strictly in the following sequence of information, on plain paper in duplicate along with copies of Degrees and Experience Certificates and Crossed Demand Draft of Rs. 25/- payable to IUC-DAEF at Indore, must reach Administrative Officer, Inter University Consortium, University Campus, Khandwa Road, Indore-452 001 **on or before 15-04-1997**:

(1) Post applied for, (2) Name, (3) Father's Name, (4) Permanent & present postal Address, (5) Date of birth, (6) Age as on 01.01.97: Years, Months, Days, (7) Whether SC/ST/OBC/PH/Ex.Ser/General, (8) Educational Qualifications (commencing from SSLC or Secondary level) giving details of Board, Year, subjects, percentage of marks, division/grade, (9) Technical/Professional Qualifications giving aforesaid details, (10) Experience as an employee giving details in separate col. about Name of the employer, designation, Pay Scale & gross emoluments, Period (**Years, Months Days**), Nature of Duties, (11) Any other relevant information, (12) Details of demand Draft, (13) Dated signature. *The applicant for post of Scientist should give details also about (1) Research Experience giving details as under 10 and about the papers published & presented, (2)* Name & address of two referees under whom the person has worked.

No application money to be paid by SC/ST candidates provided proof of the same is submitted along with the application. *The envelope containing application* should be superscribed **'Application for post of ....'**. Candidates already in Service should apply through proper channel. If there are large number of applications, we reserve our right to call only limited number of persons for test/interview.

Application lacking in any of the requirements and applications received late shall not be entertained. **Only Demand Drafts** will be accepted. Canvassing in any form will be a disqualification. Applicants selected to be called for test/interview will be informed at appropriate time. No other correspondence/query will be entertained.

ADMINISTRATIVE OFFICER

INDIAN COUNCIL OF MEDICAL RESEARCH

ADVT.NO. 3/97/ICMR HQRS. OFFICE

Applications are invited **upto 25th April, 1997** for the following posts in the Hqrs. Office of the Council, New Delhi. These posts under ICMR research cadre are transferable to anywhere in India.

Assistant Director-General (Medical)-One post: Scale of pay of : Rs. 3700-125-4700-150-5000. *Qualification & Experience*:(a) *Essential*: MBBS with 12 years of research/teaching/clinical experience in the field of obstetrics & gynaecology **(b) Desirable** : MD or equivalent degree in Obstetrics & Gynaecology with 10 years of research/teaching/clinical experience in the field of obstetrics & gynaecology, alongwith publications. **(c) Job Description** : To assist in planning, coordination and conduction of research programmes in the *field of Reproductive Health & Nutrition with special emphasis on multicentre* studies.

SENIOR RESEARCH OFFICER (MEDICAL)-TWO POSTS (I & II): SCALE OF PAY OF : RS. 3000-100-3500-125-4500. QUALIFICATION & EXPERIENCE: (a) Essential: MBBS with 6 years of research/teaching/clinical experience in the field of Paediatrics for **Post-1** and Public Health/Community Medicine/ Social Preventive Medicine for **Post-II. (b) Desirable:** MD or equivalent degree in Paediatrics with 2 years of research/teaching/clinical experience in the field of Paediatrics for Post-1 alongwith publication and (ii) MD or equivalent degree in Public Health/Community Medicine/Social & Preventive Medicine with two years of research/teaching/clinical experience in the field of Reproductive Health & Nutrition, alongwith publications, for **Post-II. (c) Job Description** : To assist in planning, coordination and conduction of research programmes in the field of Reproductive Health & Nutrition with special emphasis on child health for **Post-I**, *and public health research programmes in the field of Reproductive* Health & Nutrition, for **Post-II.**

Age: Below 45 years. SC/ST candidates allowed relaxation in accordance with Govt. *of India rules in force. Benefits of Pension is admissible. Private practice* is not allowed. However, NPA as per rules of the Council is admissible to Medical graduates only. Application forms and other details are obtainable from the office of the **DIRECTOR GENERAL, INDIAN COUNCIL OF MEDICAL RESEARCH, ANSARI NAGAR, NEW DELHI-110029.** Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Ansari Nagar, New Delhi-110029 with a crossed IPO for Rs. 8/- payable to DG, ICMR, New Delhi. SC/ST and disabled candidates are exempted from this payment.

Applications received late, incomplete and/or without required postal orders will not be entertained.

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*** Begin in June, 1997**

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For **APPLICATION FORM AND PROSPECTUS** for the above courses please write to the **Editor, CIEFL, Hyderabad - 500 007 enclosing a crossed Postal Order / Demand Draft for Rs. 50/- (Rupees Fifty only) in favour of the Registrar, CIEFL, Hyderabad - 500 007.**

Applications can also be had from the following Regional Centres :

The Director, CIEFL Regional Centre

Moti Mahal Campus, 2, Rana Pratap Marg,
LUCKNOW - 226 001.

Mayurbhanj House Campus, Nongthymmai,
SHILLONG - 793 014.

Completed Application Forms should reach the undersigned by 11-4-1997.

Sd/-

(G.VENKATESHWER RAO)
REGISTRAR

Hyderabad
7-3-1997

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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 13 MARCH 31, 1997 Rs 9.00

MAHARAJ SINGH

Discovery of One's Hidden Potential — The Role of Intelligence

KESHAVA & BIRENDRA KUMAR

Professional Activeness of Agricultural University Teachers

J. SAM DANIEL STALIN

English Language Teaching for College Students

YOGINDER K. ALAGH

Biotechnology and Sustainable Agricultural Growth in Ninth Plan

— Convocation Address

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UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Discovery of One's Hidden Potential
The Role of Intelligence

Maharaj Singh*

Psychologists are proud that the concept of intelligence belongs to their discipline. However, this concept is still not being clearly understood. Many psychologists avoid the use of the concept in their overall framework of psychological theories. Nevertheless, intelligence has been one of the central themes of psychology and all disciplines involved in the scientific study of behaviour and the study of human brain. Intelligence has been expressed as an ability to guide 'goal directed adapted behaviour'. Accordingly, intelligence provides insight as well as direction to the unique human potential for achieving the goal. The human potential doing something extraordinarily is not only unique and specific to all, but it also provides opportunity to every person on earth to excel in one area or the other. However, the question mark often lies in the ways to discover such a unique potential within self. The volumes on various religions around the world emphasize the need for looking into oneself, searching for superego, practising continuous self evaluation, and working on self-soul search. According to the theory of human need people do possess one of the higher order needs which is known as 'self actualisation'. According of the theory the need for self-actualisation usually remains unfulfilled for most of the people in their entire life span. Self-actualisation may lead to the discovery of one's potential.

Regarding the hidden potential, some people not necessarily known to be smart, are able to discover their hidden talents and usually excel in their own areas. *Idiot savants* are example of people with low smartness, but with extraordinary talents in one or more fields. The specific domains in which the savants have been found to have extraordinary talents, usually are, music, chess, art, or memory for particular type of facts. The explanation of such extraordinary talents in most savants lies in their organisation of brain functions and sometimes even to the abnormality in some portions of their brain. In scientific literature one example of idiot savant has been extensively studied by Lorna Selfe (1983). According to Selfe (1983), a girl named Nadia although failed to develop language properly, was able to demonstrate her extraordinary drawing ability even at the age of three and half years. In the later years Nadia remained poor in her linguistic expression, but excelled in her non verbal expression through her art and drawing abilities.

To make a self discovery for finding out his or her potential (abilities) for excellence in one or the other area, knowledge of his or her abilities including the level of intelligence might be helpful. Intelligence as one of the potential abilities has been fascinating the scientists, psychologists and to a lessor extent, the people from all walks of life. The reason may be that if the continuity of intelligence across all living organisms is assumed, probably it is the principal ability that separates humans from other creatures. The concept of intelligence and its measurement as intelligence quotient, however, still remains one of the most controversial topics in scientific literature pertaining to human cognition and human biology.

**Department of Psychology, Ch. Charan Singh University, Meerut-250 004.*

Intelligence in general refers to the all round effectiveness of an individual's mental processes, particularly his or her comprehension; learning and recall; and thinking and reasoning capacities and capabilities. Because no one can observe or measure the mind or mental processes as such, one can only imply a person's mental ability such as intelligence from his or her behaviour in various situations. No consensus exists among psychologists on the definition of intelligence, or on the number of its different dimensions. Similarly, there has been a considerable disagreement upon the validity of the measurement of intelligence in the form of intelligence quotient (IQ).

Many scientists believe that intelligence quotient can be applied to judge as a person's potential or suitability for particular task or job, while others describe the concept of intelligence and its measurement as totally useless. Many scientists and psychologists consider that something is still missing in the concept of intelligence and its measurement. For example, Norman Geschwind, the noted Harvard neurologist mentioned that some people with massive frontal lobe brain damage, whose personality, motivation and even insight had been irreversibly damaged, could still score a near genius intelligence score. This fact, according to Geschwind, clearly showed the bankruptcy of intelligence and its quotient. On the other hand, psychologist like Eysenck claims that IQ tests reflect the actual cognitive abilities. The paradox of psychology is that IQ test is probably the biggest technological contribution of psychology, yet, flaws in IQ tests render it as useless. The main issue is probably not the validity of the IQ tests, but it lies in the concept of intelligence itself. If one can understand the complexity of intelligence, it will be easier to devise a valid and reliable measure of this cognitive ability.

Like many other psychological concepts, intelligence has its root in the controversy of the problem of nature-nurture. Do we acquire abilities? Are we born with all the hardware to develop such abilities? In case intelligence consist of learned skills, it is possible to devise programmes to teach the people to acquire such skills. The theorists subscribe that smartness is a complex web of abilities that results from the interaction of genes and environment. Does the complex web of abilities represent in a unitary trait? Does it consist of several different abilities that exist separately and independently? According to Howard Gardner of Harvard university intelligence is far from the unitary power of mind, rather it consists of a set of mental abilities that not only manifest themselves independently, but are subserved by different areas of the brain. According to Gardner there are seven broad categories of intelligence. Out of seven the three conventional are verbal, mathematical and spatial. The remaining four, according to Gardner, are musical ability, bodily skills, ingenuity in dealing with others and self-knowledge. The last two categories have been difficult to subscribe by the scientists. The evidence for the existence of these abilities, according to Gardner, has come from the observation that each one of these types of intelligence can be destroyed by the damage of the particular area of the brain.

On the other hand, according to Robert Sternberg there exists a single unitary trait 'intelligence'. Sternberg proposed a triarchic theory in his book *Beyond IQ* (1985). According to his theory, intelligence consists of three processes. The first deals with mental mechanism people use to plan and carry out task with special emphasis on the skills by which people plan and evaluate problem solving. The emphasis here is on planning rather than on speed. The second part deals with the effect of experience. For example, an intelligent person not only solves new problems quickly, but also learns to solve familiar problems by rote in order to make his mind free for other work. The third part, which focuses on practical intelligence, asserts that common sense depends largely on tacit knowledge that might loosely be defined as all the extremely important things that are never taught in formal schooling.

According to Sternberg, success in life often depends on tacit knowledge rather than on explicit information. One can think of millions of people who did not have the opportunity for the formal education, they remained illiterate, but still they are successful in their lives and sometime make better living than the educated persons. Many of the illiterate people, indeed are, intelligent. How can IQ of those people be measured? The answer may be that their IQ can be measured by using non-verbal IQ test. The question still remains whether these scores are comparable to the scores obtained by the educated persons on the normal verbal and non-verbal tests. According to the statistical theories IQ like many other traits, is normally distributed over a large population and may be independent of many demographic variables.

Psychologist Jon Baron, University of Pennsylvania, in his book *Rationality and Intelligence* (1985) defines the essence of intelligence as resultant of rational thinking. According to him teaching people to think rationally can make them more intelligent. Contrary to the above position, Arthur Jensen, a controversial theorist, believes that genes and not culture or environment determines intelligence. According to Jensen, intelligence results from the bio-physical properties of the organic neuron of the brain that works under limit set at the time of birth. The more controversial, Jensen argues that there may be clear cut differences in average intellectual potential among races and among nationalities.

This above account of the concept of intelligence shows that there exists disagreement in the definition of the concept intelligence. The nature-nurture contribution to intelligence like in the other domain of psychological concepts, still remains to be solved. However attempts have been made to measure intelligence in the form of a quotient known as intelligence quotient. Like the concept of intelligence, the concept of its quotient also remains controversial in scientific literature. For example, a culture free test of IQ, is still required by the scientific community for use across various cultures, ethnic groups and for population living in different environments.

Much of the contribution to the modern concept of measurement intelligence came around the turn of the century, when a number of scientists tried to define the concept of intelligence. In the year 1905, French psychologist Alfred Binet devised a test to help the government to identify school children for specific need for attention of the instructors. Later during forties and fifties various versions of IQ test were developed. David Wechsler of Bellevue Psychiatric Hospital in New York City devised intelligence test for adults and children that are still in practice and rival the popularity of Stanford-Binet test of IQ. In a classic paper published in 1904 British Psychologist Charles Spearman observed that there was a high degree of correlation among a variety of mental tests even among those that seemed widely dissimilar. He argued that this correlation reflected a general mental ability (g factor) which was involved in all cognitive work.

Jensen analysed a number of standard IQ tests and concluded that there exist differences in average scores of black and white Americans. The gap, according to him between races was small, but even a small difference can affect the black-white ratio at the highest and lowest levels. Several other researchers at the same time were of the view that the difference between the races can be attributed to the bias in the test. Also there could the impact of the environment. For example, John Ogbu, a Nigerian working at Berkeley as an anthropologist, concluded that IQ tests designed for one culture may not be suited for being applied to another culture.

Whether intelligence is determined by the genes or influenced by the culture, the IQ tests seem to be biased for particular type of environmental context. IQ tests' scores often are influenced by a particular type of training or by the lack of training. However there exists some compelling evidences that most of the intelligence is biologically determined and that the environment plays minor role in the final outcome of the intelligence. For example, Stanley and Benbow on the basis of their data of the exceptional children of 13 years of age, concluded that on the math part of American College entrance test, the boys outnumbered girls. At this stage the boys and girls had similar training in mathematics. The explanation of the difference between boys and girls, can only be explained in terms of the genetic difference between male and female subjects. However, not all scientists were ready to subscribe to the idea that bright 13-year old boys may be innately better at math than girls.

Norman Geschwind and his coworkers came up with the idea that level of hormone 'testosterone' during the critical embryonic period is responsible for the development of brain lateralization of functions in such a way that enhancement in the development of right hemisphere at the expense of left hemisphere, takes place. This could account for the fact that males are more likely to be left handed and also for the fact that males are better in mathematical and spatial abilities. The left hemisphere, for example, is known to subserve logical sequential and linguistic functions, whereas right hemisphere is known to excel in non-sequential and non verbal and spatial ability functions.

The question whether intelligence is increasing in the society with time has again complexity in the definition and the measurement of IQ. If however, one considers cultural advancement, there is little doubt that at least in scientific and technical matters, today's culture is vastly advanced over those centuries ago. According to one of the points of view intelligence seems to be meaningless when separated from its cultural roots.

Various interrelated concepts making a complex human cognition have been interacting with the environments and growing with the evolution of human beings over large span of time. Out of these complexities to take out one part and name it as intelligence in the form of a unitary concept is indeed not easy. It is believed that IQ declines about 3 to 4 points over the span of every ten years after the age of 20, but some form of intelligence known as 'crystallised intelligence' that is referred as the sum total of knowledge and experience develops. What seems to be more important in the accumulation of knowledge is the capacity to receive, store, process and retrieve bits of information. This entire process may be termed as the intellectual organisation of information in our brain and such process may be called wisdom. The use of one overall IQ scores to represent intellectual changes with age may be oversimplification. Horn (1978) argued that the declining scores for older adults represent only one aspect of intelligence that is 'fluid intelligence'. Fluid intelligence refers to the general mental skills.

The other relevant question pertains to the relationship between intelligence and success in life. The common belief is that intelligent persons are most successful in their pursuit of goals. However, some intelligent persons have been found to make messes of their lives and at time many intelligent persons take unintelligent decisions. Many psychologists including Sternberg think that problem with some people actually lies outside the purview of the realism of intelligence. There may be a number of factors including lack of motivation, inability to persevere and maybe failure to know one's limitations can affect success in one's life. The trick for success may perhaps lie in the trick of playing to one's strength. According to Gardner creativity is another dimension that makes substantial contribution to one's success in life.

Thus the concept of intelligence and its measurement is still very much debatable. According to the modern definition of intelligence, it is the capacity to learn and use information. In other words it is the capacity of the organisation of information in efficient and cost effective manner to make use of the same. It is however difficult to understand the intelligence in the form of a set of operations. The concept has its usefulness in the sense that classifying people at low and high extremes of intelligence will help the educators to *devise the programme that is best suited to individual* needs. Not surprisingly, several controversies have arisen.

It has generally been argued that IQ tests are not fair to minorities, poor and many cultural and tribal subgroups. According to such argument differences in performance on IQ tests could well be caused by differences in opportunity to learn the tested material or by differences in capacity to learn. If some cultural groups have less of an opportunity to learn the tested material, the test will not provide the actual intelligence of the people belonging to those groups. Test makers have tried to make some culture-fair tests. These tests have been loaded with non-verbal materials such as relationship between geometrical forms, design and blocks and fitting pegs into the holes. Still there may be some argument that some individuals of some groups have more opportunity to be exposed to even the non-verbal material used in the IQ tests than others.

The other controversy is about the exact role of environment and heredity. In fact it has been concluded that differences in heredity and environment are so interwoven that IQ difference can be attributed to one or the other. It seems that both these effects interact in such a way that the interaction effects also vary with other factors. Such an interaction effect makes it difficult to understand the concept of intelligence and its measurement.

The modern cognitive psychologists believe that somethings is lacking in intelligence and IQ tests are not appropriate to measure the complex human mental ability. The cognitive psychologists are now trying to relate simple cognitive components to IQ scores. These cognitive components are based upon information processing model of cognition. According to the theory of information processing the more intelligent person is likely to receive, store and retrieve in an effective manner. Efforts should be made to analyze intelligence into information processing components and the areas such as language, thought, learning, memory and perceptual process be included in analysis of intelligence.

Intelligence, therefore, is a concept that is as complex as human being itself. There is a lack of consensus among scientific community not only on the exact and operational definition of the intelligence, but on the topic of its measurement as well as usefulness of the concept in the present form. However, the concept of intelligence as well as of IQ has been serving the humanity for long time and there is no reason to believe that the concept will vanish in the foreseeable future. *According to the emerging trends, viewing intelligence* as a function of the operators of information processing seems to be gaining ground. The future research on the understanding and measuring intelligence should therefore be focused upon the identification of the operations of information processing by the individuals. Once the nature of the operations of the information processing is well understood, it may be one step toward finding out one's own hidden potential. We have some very high degree of variations not only in terms of our behaviour, but also in terms of our abilities and capabilities and even with same amount of abilities, we differ in our strategies of solving the problems. According to one study forty-four professional mathematicians used thirty-six different strategies in making the simple estimates of some multiplication problems.

Professional Activeness of Agricultural University Teachers

Keshava *
Birendra Kumar **

Agricultural higher education is comparatively younger and recent phenomenon. It received tremendous boost with setting up of state agricultural universities (SAUs) based on Land Grant Universities of USA. The concept of SAU is based on three pillars of teaching, research and extension. Teachers of agricultural universities have three-fold roles of teaching courses, conducting basic as well as applied researches, and participating in extension activities. This calls for continuous learning and alertness on the part of teachers. The study aims to assess opportunities of academic exposure and research for SAU teachers.

Scientific methods and approaches are changing very fast in tune with the changing world scenario. Thus, new knowledge and skills are required to keep pace with recent developments in research. In-service training and participation in seminars, symposia, etc. provide opportunities to keep teachers up-to-date.

A study was conducted at G.B. Pant University of Agriculture and Technology, Pantnagar, as it is first state agricultural university on Land Grant University pattern of U.S.A. One hundred eleven respondents were selected through stratified and proportionate random sampling from the three major segments of teachers, viz. Assistant Professors, Associate Professors and University Professors. Data was collected through a tool specially developed for the study.

Majority of sampled teachers (68.47%) did not attend any in-service training course during last five years. Only 17.12 per cent teachers attended training organised at national level followed by international courses (11.71%). Merely 2.7 per cent teachers attended both type of courses (Table 1).

The responses of teachers regarding their participation in various levels of seminars revealed that majority had attended national level seminars with papers (65.77%) followed by those without papers (49.55%). 27.93 per cent teachers attended international seminars with papers. Participation in regional and state level seminars was less (Table 2).

Agricultural teachers' exposure to and experience with their counterparts in other parts of the world also is an important dimension of their job. It provides exposure to different farming situations, problems and their solutions. Besides, the capacity in which they interact with their counterparts of other countries indicates their professional competence and calibre. Data regarding foreign visits of scientists (Table 3) indicate that majority of them (63.06%) did not visit foreign countries during the last five years. Most of them (13.51%) visited to participate in seminar, conference, workshop or symposium followed by those who were trainees, post-doctoral/doctoral candidates (10.81%). Only 7.21 per cent scientists served as resource persons.

The conventional agricultural research method is woefully inadequate to respond to the carrying needs of the resource poor farmers because researches are being done on well endowed farms. Scientists are unaware of the felt problems and needs of the farmers and farmers are not involved in technology generation process. However, a new wave of researches with full interaction of scientists are being run in SAUs. The responses to the study revealed that nearly 50 per cent of the scientists had experience in the new research approach (Table 4).

Type of research projects being handled is an important indicator of professional agility of the academicians. 30.63 per cent teachers reported that they had no M.Sc./Ph.D. students' project to guide while only 9.01 per cent teachers were not involved in any research projects other than M.Sc./Ph.D.

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ones. Majority of teachers were engaged in one to two research projects of both types (Table 5). This indicates that agricultural universities' teachers devote sufficient time to research activities also.

Agricultural researches fall in both basic and applied categories. The data revealed that majority of teachers (96.40%) pursued applied researches followed by basic researches (74.74%). 37.84 per cent of teacher had 75-100 per cent applied research. Majority (36.04%) of those pursuing basic research had almost 25-50 per cent research of this type (Table 6).

Table 7 shows that out of a total of 159 research projects going on at the time of data collection, 40.99 per cent were multi-disciplinary in nature involving teachers from more than one discipline. Most of the research projects (61.63%) were funded by Indian Council of Agricultural Research/Central Ministry. Funding by input manufacturing agencies (6.30%) was negligible. Now a days privatization of higher education and research is a topic of discussion because government sector is unable to support it fully. Thus, encouragement of funding by private sectors demands some policy measures.

Publication of papers in scientific journals has been considered as one of the parameters of scientific productivity. This is the best way of sharing new ideas and knowledge. It is clear from Table 8 that majority of teachers (94.59%) contributed to national journals in joint authorship. Out of the teachers who contributed mostly (40.54%) had 1-10 papers to their credit in joint authorship. It is necessary to mention here that data regarding contributions had been taken for whole service period and majority of the teachers had experience of sixteen years or more.

Conclusion

The study points to the imperative need to increase opportunities for inservice training and scientific interactions, which are probably less frequent due to resource crunch. Similarly, only a handful of SAU teachers have experience of participation in farmer-focused research. There is urgent need to generate economically viable, operationally feasible and stable technologies matching with needs and resources of various farming systems. This demands more scientist-farmer interaction and interaction of scientists with problems of different farming situations.

Table 1 : Type of in-service training courses attended during last five years (N = 111).

Category	*No. of teachers (%age)*
National Courses	19 (17.12)
International Courses	13 (11.71)
Both types of courses	3 (2.70)
No course	76 (68.47)

Table 2 : Levels of seminars and conferences attended by SAU teachers in last five years (N = 111)

Category	*Participation only*	*Presentation of paper*
	Frequency (%age)	*Frequency (%age)*
Regional	20 (18.02)	13 (11.71)
State	15 (13.51)	16 (14.41)
National	55 (49.55)	73 (65.77)
International	15 (13.51)	31 (27.93)

Table 3 : Purpose of foreign visits by SAU teachers (N=111)

Category	*No. of teachers (%age)*
As resource person only	8 (7.21)
As trainee only	12 (10.81)
As participant in seminar only	15 (13.51)
As resource person and participant in seminar	1 (0.90)
As trainee and participant in seminar	1 (0.90)
As resource person, trainee and participant in seminar	4 (3.61)
Not visited	70 (63.06)

Table 4 : Teachers' experience in farmer-focused research projects (N = 111).

Category	*Frequency*	*Percentage*
Who had experience	53	47.75
Who did not have experience	58	52.25

Table 5 : Distribution of teachers according to number of research projects being handled (N = 111)

No. of projects	Teachers having: M.Sc./Ph.D. research projects — Frequency (%age)	Teachers having: Other than M.Sc./Ph.D. Projects — Frequency (%age)
0	34 (30.63)	10 (9.01)
1	28 (25.23)	58 (52.25)
2	38 (34.23)	29 (26.13)
3	8 (7.21)	13 (11.71)
4	2 (1.80)	1 (0.90)
5	1 (0.90)	—

Table 6 : Distribution of teachers according to nature of research work (N = 111)

Percentage of research	Basic research Frequency (%age)	Applied research Frequency (%age)
0	28 (25.23)	4 (3.60)
1-25	32 (28.83)	5 (4.50)
25-50	40 (36.04)	28 (25.23)
50-75	5 (4.50)	32 (28.83)
75-100	6 (5.40)	42 (37.84)

Table 7 : Nature of research projects (other than students' researches) (N = 159)

Category	Frequency	Percentage
According to discipline involved		
Uni-disciplinary	94	50.01
Multi-disciplinary	65	40.99
According to funding agency		
University/State Government	46	28.93
Indian Council of Agricultural Research/Central Ministry	98	61.63
Input manufacturing agency	5	3.14
International Organisation	10	6.30

Table 8 : Agricultural Teachers: Distribution by number of contributions to National and International Journals (N=111)

No. of Contributions	National Journals		International Journals	
	Single authorship(%age)	Joint authorship(%age)	Single authorship(%age)	Joint authorship(%age)
None	74 (66.67)	6 (5.41)	100 (90.09)	46 (41.44)
1-10	36 (32.43)	45 (40.54)	10 (9.01)	45 (40.54)
11-30	1 (0.90)	38 (34.23)	1 (0.90)	18 (16.27)
31-60	—	22 (19.82)	—	2 (1.75)

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English Language Teaching for College Students

J. Sam Daniel Stalin*

A college is a cosmopolitan place where students from different social, educational and cultural backgrounds amalgamate. English plays a vital role among the student community. Although English remains primarily their medium of learning for everything from English literature to science and technology, it plays an indispensable and inextricable role in communication, to express themselves to others as it remains to be a common language linking the variety of students hailing from a myriad of social, educational and cultural backgrounds.

English being a foreign language one cannot expect every student to master it to perfection as it is only being taught consciously as a second language almost to every student right from childhood, though there could be some exceptions where certain students are fortunate to have been brought up in an absolutely English language atmosphere right from their childhood. This being the scenario it is only natural to see different kinds of students with respect to their proficiency in oral and written English. As most of the students have their initiation to English only in schools they could be broadly categorized into three types with respect to the kind of schools they hail from.

They are (a) Public School Students; (b) Urban School Students; and (c) Rural School Students.

Public School Students

College students who are products of public schools are predominantly very good in oral English, i.e. in the skill of communicating effectively. They push their way through everywhere, much to the amazement of everyone. Debates, extempore competitions and ground discussions, the time tested and fool proof way of picking up the really talented and sterling people with calibre in today's highly competitive world is a cake walk for these students. They make their friends and every listener engrossed in their conversation. Their language does not confine to any particular type but is of many kinds depending on many factors like social differences, educational qualifications, knowledge of English, intimacy, authority etc of the people to whom they speak. No wonder these people take pride in their high standard of language which also creates in them great confidence to go anywhere to meet the challenges facing them. Their commendable and sterling standard of English helps them in an incredible way in their studies too. It equips them adequately to express their ideas and wrangles precisely and intelligibly. They invariably grab the top ranks in their classes and some outstanding students even get recruited to lucrative white collared jobs even at their graduation level.

College students hailing from public school unanimously agree that the exceptionally proficient teachers who taught them English in their childhood, their excellent methods of teaching and the right environment in public schools equipped them fully to develop their mastery in English language. The language of these students is flawless, of high standard, precise and intelligible. Their voracious reading habit endows them with commendable authority over the language. They use apt words and phrases to illuminate their point. They employ exceptionally good diction indicating their copious vocabulary. The conducive atmosphere in their schools has kindled their latent potential and moulded them fully. Their constant exposure to many competitions have tuned their language to such an extent that words never fail them in any impromptu situation. Their language register fluctuates frequently with ease, with respect to the different people they talk to.

The casual, colloquial language of the students hailing from public school is pregnant with slangs, which has become part and parcel of their language now a days, and with which they proudly identify themselves too. Their perfect intonation, rhythmic variations, rise and fall of tones and right pauses at the right places contribute effectively to make their expressions clear and forceful.

Urban School Students

Students hailing from urban schools stand next to the public school students. The urban school students, like the city bred ones, are able to understand English but unlike them are not quite proficient and spontaneous in their spoken English. They speak English and fumble for right words due to their poor and inadequate vocabulary. Their sentences are sometimes faulty and their language is generally restricted to particular type and they do not excel in their registers. Casual colloquial language is not their cup of tea like their public school counterparts but they are reasonably good in formal conversation. There is no trace of slangs in their language. These students do not read much and their education is basically exam and career oriented. They are reasonably equipped to write well in English and only the limited facilities, lack of opportunities and environment deny them the needed practice to improve their communication in English. Despite all these handicaps they strive hard and toil continuously at their colleges to speak good English and make themselves more acceptable and pleasing. They closely observe fellow students in the college and exploit the new circumstances favourably to groom their language.

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Though they have been withheld from the much praised accent, intonation and spontaneity due to the less satisfactory environment in their schools, the urban school students, generally confess that their college atmosphere takes them to new heights by leaps and bounds. They are confident, kindled and inspired to perfect their communication skills in English by exploiting the pastures available in the colleges. One interesting feature according to these students is the positive role played by co-education system of education in motivating both boys and girls to improve their English. This system induces boys and girls to add life to their language to befriend each other. Against all odds the urban school students enter the arena of the college and leave no stone unturned to make good the losses they had suffered in their schools and they go out of the portals of the college as cheerful, confident and courageous young men and women, thoroughly transformed, who will no longer be tonguetied but articulate in English to tackle all challenges.

Rural School Students

It would be no exaggeration to say that the standard of English of the college students hailing from rural schools is pathetic, deplorable and they cut a sorry figure in front of their fortunate brethren hailing from public schools and urban schools. Owing to their poor vocabulary they frequently employ words in their mother tongue. Even simple English words are incomprehensible to these students and they are unaware of the basic sentence structure too. The little English these students know is only as a result of their mechanical memorising, just to secure a minimum pass by reproducing it in their examination. They will find it extremely difficult to take their examination in English in the colleges and many fail miserably. Because of these reasons they develop an inferiority complex and isolate themselves from the mainstream of students. At this juncture the parents of these rural students, with their obsession with English fall a prey to the enticing advertisements and waste exhorbitant money by buying books for their children which claim to transform them into masters of English overnight.

The college students coming from rural schools complain of incompatibility in the very system of our education which assumes their standards of knowledge with English in particular, to be at par with their city bred counterparts who are at the zenith of their calibre. According to them the present system of education only promotes aversion to English in their minds.

We have now reached a stage where everyone irrespective of being an urbanite or a ruralite has realised the necessity, the indispensable and inextricable role of English in the society for education and employment purposes. Even villagers are very particular about imparting education to their children through English medium schools, which is the best and the strongest testimony for the need to impart quality English education in our country.

Besides identifying the standard of English of the students and the facilities and inadequacies faced by the student community in learning English, this research and the interviews with numerous students have equipped the author to suggest remedial measures. The following suggestions could be considered to uplift the standard of all English language learners in general, particularly the rural students, from the present irredeemable and tragic state.

(i) The syllabus for English in the rural schools should be brought to the rudimentary level and specially qualified and trained teachers in English Language Teaching should be appointed in schools and colleges. If this is not feasible all English teachers of schools and colleges should be given periodical special training through workshops for better English Language Teaching;

(ii) Appropriate curriculum should be designed by experts in English Language Teaching, to make the programme interactive, by employing various techniques like role-play, play reading, group discussion, buzz group activity, debates, elocution, etc which would involve the students in the English study;

(iii) Schools and colleges should encourage students to speak in English and the authorities should organise frequent competitions like debates, extempore, elocution, group discussion, etc which would unconsciously remove the stage fright and make the students more expressive;

(iv) The colleges should be empowered and encouraged to adopt the stream so that all students with respect to their varying degree of proficiency in English would reap the benefits of learning English. This system would definitely provide a challenging atmosphere to the outstanding students and a healthy atmosphere to the average and weaker students in English;

(v) The conventional evaluation methods should be modified appropriately so that they assess both the learner's theoretical knowledge and oral communication skills in English;

(vi) To inculcate a passion for reading and to develop the vocabulary of the students, supervised library study hour could be allotted every day for specific tasks, impelling the students to study and assimilate the content of the given task;

(vii) As there is a gradual rise in the trend towards job oriented courses, the university could contemplate vocationalising English and designing separate English curriculum for every subject by analysing the requirement of specific jobs in consultation with the employers and professionals of various fields;

(viii) The colleges could arrange for remedial English programmes either during the lunch break or after the college hours for the weaker students in English;

(ix) According to the local needs and standard of the students, the colleges could offer an enrichment course or a diploma course in 'Spoken English and Public Speaking' in addition to the university prescribed English curriculum;

(x) The students could be frequently exposed to good English plays, movies of popular classical novels and good English programmes through video sessions in the classrooms.

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Biotechnology and Sustainable Agricultural Growth in Ninth Plan

Prof. Yoginder K. Alagh, Minister of State for Planning & Programme Implementation and Science & Technology, Government of India, delivered the convocation address at the fifteenth convocation of Gulbarga University, Gulbarga. He said, "Modern biotechnology can make important contributions to crop, livestock, forestry and fishery development. It holds promise for increasing the productivity, quality, efficient processing and utilisation of products and at the same time reduce reliance on agrochemicals and other external inputs. In order to meet the twin objectives of accelerated production growth rate and sustainability, development and use of eco-friendly and production-enhancing technologies is of high priority". Excerpts

Long Term

In the next 25 years, the world *will face the greatest challenge of* the century to produce enough food to feed an additional 90 million people each year, as well as to meet the diversity of food requirements due to rising incomes and changing life-styles. These needs will have to be met from more efficient use of land already *under cultivation. Major* expansion of cultivated area may not be an economically or environmentally sound option. Food will have to be produced where it is most needed, in developing countries, not only to increase food supplies but also to generate income and employment through agriculture and the related operations resulting in higher economic growth. As incomes rise, the food basket is diversified. Non-food agricultural demand also goes up. Export demand also increases the demand for non-food crops and non-crop based agriculture like meat, milk, fish and forest products. This has been happening in India since eighties due to growth in demand, diversification and exports of agricultural produce. The Prime Minister has strongly supported this process of agricultural growth and diversification. Karnataka's Agricultural Policy gives a concrete instance of these trends. Eight hundred million people face food insecurity of which 200 million are in India. *One hundred and eighty five million* pre-school children seriously suffer from malnutrition and are underweight for their age. "2020 Vision" projects that, with the present scenario, the number of malnourished children is likely to decline only slightly to 156 million by 2020. This document also has special projects in the areas like milk and other agro-processed sectors.

The International Food Policy Research Institute, envisages that by 2020 "every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent and where food originates from efficient effective and low-cost food systems that are compatible with sustainable use of natural resources". The key challenge in realising the 2020 Vision would be to overcome the lack of commitment and to develop the political will to eradicate poverty and hunger and to protect the natural resource base. Failure to take action will lead to persisting hunger and poverty, continuing degradation of natural resources, increasing conflicts over scarce resources, and widening gap between the rich and poor. Development has to be based on the sustainable use of local resources of land, water and energy.

Immediate Problems

There is much that is of concern in Indian Agriculture as we enter the *Ninth Plan. Agricultur*al fixed capital formation require fixed investment to finance growth which is nowhere in sight. This is happening at a time when area growth has stopped and investment requirements are high so that agricultural intensification can only proceed through larger *investments in land* and water and yield improvements. The crisis of channeling larger loanable funds through declogging rural credit lines continues.

In the short run, wheat stocks are below requirements for the first time after more than a decade. Wheat prices rose by more than 10% and rice price by 7.2% in the last agricultural year. In the first four months of this agricultural year, wheat prices rose by 18% over the same period last year and rice price by 9.4%. The procurement price incentives given by the Government and the emphasis *on irrigation* in the advanced Irrigation Benefit Programme are serious attempts to begin the reversal of these trends. Short run imports have also been planned.

Per capita income in the State of Bihar in the last five years has fallen and that in U.P. is constant.

Apart from West Bengal, agriculture in the Eastern Region is not doing well. The rural male worker current daily status unemployment rate – the only major indicator of unemployment – measuring disposition of labour time has gone up from 4.58% in 1987/88 to 5.64% in 1993/94 – an increase of 23%. Canal irrigation has stopped growing.

(a) Land scarcity will become an acute feature of the Indian agriculture and rural economy and judicious use of land and water will be central to the growth process; India would be facing for the first time population densities of the East Asian type.

(b) Community and cooperative land and water development schemes and self-help and other credit and marketing arrangements will be critical to the achievement of food security, agricultural output and employment requirements;

(c) Institutions supporting agriculture will have to adjust relatively faster growth of non-cereal and non-crop based activities; and

(d) The sector will have to engage in cost reduction and diversification in first-stage processing of agricultural produce like sugar refining, cotton ginning, agricultural storage and vegetable and fruit processing, if it is to maintain its momentum in the increasing access of agricultural surpluses to regional, national and global markets, and in view of all these requirements;

(e) Private and public investment in agriculture will need very substantial increase.

Diversity in Resource Potential of Indian Agriculture

Given these problems and the physical and bio-genetic diversity of the Indian subcontinent, it is economically rewarding and resource augmenting, to follow a strategy of diversified and regionally differentiated agriculture. For example, in the agro-ecological zoning of the FAO, India is one of the few developing countries studied which has crop production potential in almost all land class types — dry semi arid, moist semi-arid, sub-humid, fluvisols and gleysols. Within India there are many agro-ecological zones of the developing world. Has the share of moist,

Table-1 : Land Reserves and Balances : Comparative Status India, Region and Developing World

Sl. No.	Land Class and Potential	India mn.hec.	%	South mn.hec.
0	1	2	3	4
1.	Dry Semi Arid (MS,S,VS)[1]	27.84	14.48	30.36
2.	Moist Semi Arid (S, VS)	81.03	42.34	86.07
3.	Sub Humid (S,VS)	45.58	23.70	61.81
4.	Humid (S,VS)	5.02	2.71	7.09
5.	Marginals in S.No.2,3 and 4	19.18	9.97	29.78
6.	Fluvisols/Gleysols (S,VS)	12.15	6.32	27.15
7.	Marginal (luvisols/gleysols)	0.66	0.03	2.16
8.	Total Rainfed potential	191.45	100.00	244.42
9.	Irrigated Desert	..	0.00	15.29
10.	Total Crop Production Potential of which currently *used for Crop Production*	..	*100.00*	259.71
11.	Rainfed	113.75	59.41	136.88
12.	Irrigated	43.04	22.48	64.41
13.	Total[2]	156.79	81.89	201.29
14.	Weighted Total	184.97	96.61	249.1
15.	Balance	34.66	18.11	58.43

Note : 1. MS=Marginally Suitable; S=Suitable; VS=Very Suitable. 2. Classes is weighted to roughly reflect potential cereal yield. The wei Dry Semi-Arid; 0.88=Moist Semi-Arid; 0.85=Humid; 0.95= Marginal in humid; 0.81=Fluvisols and gleysols; 0.35=Moist fluvisols and gleys. *Source* : See FAO, Agriculture Towards 2010, Rome, FAO, 1993, Chs 2,4 a Resources for Populations of the future, Rome, FAO, 1982; and FAO, Rep Zones Project, Rome, FAO, 1978/81.

humid and fluvisol/gleysol agro-ecological sequences in India approximate those in the developing world and it is perhaps one of the few countries, with some others like Brazil, China and Indonesia, which is "World within the World" (Table 1). This is indeed a great policy challenge and opportunity. Particularly so in an emerging environment which regards bio-diversity as nature's bounty and not as earlier, a constraint to technological progress.

The agro-climatic planning work of the Planning Commission and ARPU "based on soil characteristics and climate", suitably augmented, can well provide the basis for a practical policy of diversification from a commodity to a farming system and regional development approach. "Synergies between economic growth, poverty alleviation and environment will need to be exploited", with a significant beginning made in the Eighth Five Year Plan, as a part of a Long Term Perspective (10 to 15 years) Development Programme.

Policy Reform for Sustainable Agriculture

Now that a Plan for Agro-Climatic Planning is ready, the emphasis has to shift to implementation and policy details. The basic objective of economic policy reform for the agricultural sector has to unleash the power of decentralized commodity and factor markets, to develop the resource potential of different regions. Improvements in profitability, by access to demand centres and reduction in capital and input prices, accelerate the process of diversified development. Policy reform then gets structured around the fact that agricultural development is resource based. Markets help in improving profitability and the role of the Government is to provide infrastructure support for differing resources regimes. This is the essence of agro-climatic planning. Such support could relate to community level arrangements for land and water development, marketing, information and technology infrastructure needs and initial "front up" costs of more "appropriate crop and non-crop based development strategies".

Land and Water Development

In the drylands, "widespread through India", soil and water conservation are essential for sustainable production. Contour bunding, soil conservation to strengthen terraces, gully plugging, soil conservation crops, water harvesting, have all shown high returns. Land under tidal swamps and coastal areas, require special water management practices particularly drainage schemes, conjunctive use of ground and surface water for aquifer and soil management. In the irrigated areas, improved management of village services to improve the water deliveries, managed ground water exploitation, conjunctive use and drainage, have all been identified as activities with high rates of return and are also environmentally sustainable.

Soil conservation, water harvesting and water management projects generally have economic rates of return of 18% annual and above. They are also labour intensive. In a congenial economic environment for agriculture, the small peasant invariably invests in activities like land improvement, field channels and ground water development. Improved capital and credit markets and technological support accelerate the process. Some activities, also require community level action. Terrace contours, drainage schemes, off farm irrigation layouts and aquifer management, all require limited degrees of cooperation for identified purposes. The Policy challenge is to supplement the vigour of private markets with community or service organization aimed at solution of identified problems.

Recognizing these problems, I am happy that we have pursuaded the Finance Minister to introduce an Accelerated Irrigation Benefit Programme in the Annual Plan for this year. Rs. 800 crores have been provided for large irrigation projects where substantial achievement can be expected say in completing a section of the canal systems in the next two or three years and Rs 100 crores for achieving water to the field in the next two agricultural years. These programmes will be strictly monitored. More important, a Blue Ribbon Commission has been set up with the following terms of reference.

a. To prepare an Integrated Water Plan for development of water resources for Drinking Irrigation, Industrial, Flood Control and other uses.

b. To suggest modalities for transfer of surplus water to water deficit basins by interlinking of rivers for achieving the above objectives;

c. To identify important on-going Projects as well as new Projects which should be completed on priority basis together with phasing;

d. Identify a technological and

interdisciplinary research plan for the water sector with a view to maximise the benefits;

e. To suggest physical and financial resource generation strategies for the water sector;

f. Any other related issue.

Diversified Cropping

Improved land management practices permit the use of land for diversified purposes. Drainage and controlled water application are important for many field crops, land management and water harvesting for tree crops and alternative resource use for non-crop agriculture. Outside the irrigated and assured rainfall areas, a typical "desired" pattern in the shift away from a low yield subsistence crop to a profitable high yielding crop of tree/crop rotation. Access to markets are important in creating the profitability preconditions for such a switch in land-use. The agro-climatic plan has prepared a detailed land and water development strategy and a cropping strategy.

The policy challenge is therefore to :

a. arrange for "technological" and "information" support for land and water development and cropping strategies, or a "farming systems approach", in a regionally differentiated agro-climatic framework;

b. work for policy reform to operationalize economic incentives and profitability for a peasant based agriculture to strive for the desirable and sustainable investment and cropping systems activities, in particular to active markets to improve farm harvest prices and availability of inputs at competitive rates; but whenever necessary to provide for strategic, targeted and limited government or parastatal intervention; and

c. to provide for the design of institutions to support labour intensive small holder and peasant agriculture including cooperative sector, agribusiness activities for input supply, agro-processing and distribution, or community level or cooperative organizations for identified land improvement and water development projects.

Concrete Short Run Issues

At the operational level at present there are four emphases and the nature of diversification would depend on the extent to which they are implemented. These are as follows :

a. The agro-climatic regional, State and sub-regional strategies earlier developed have now been operationalised at the level of Districts. A summary of a recent pilot exercise by the Planning Commission is now available. Since such plans are resource, operations and organization wise fully tied, the speed of implementation, particularly the involvement of the banking sector, private investment and community level organizations is important.

b. The projects that have been developed have high economic rates of return (generally 18% annual or above, see Alagh 1991 for details) but need tying up at the level of private investment in agro-processing and land development, and rural credit machineries both in the banking and cooperative sectors. While having high economic rates of return, some programs are financially not viable in the initial phases on account of high resource costs of sustainable agriculture initially or market failures. Examples are high seed, irrigation or soil amendment inputs initially required before land productivity picks up or high input costs or low output prices, on account of market or infrastructure failure in the region. This needs targeted and limited subsidies. Ignacy Sachs has characterised an earlier description of such needs in the work towards Agenda 21 by Alagh as "public funding for front up costs".[1]

c. The new Small Farmer Agri-Business Project underway linking up agro-climatic planning projects with commercial and multinational investment needs much faster implementation.

d. The agro-climatic plan has to be integrated with a new structure of a third tier of local government introduced by the recent Constitution amendments in India (73rd and 74th Amendment Acts) and with the Employment assurance scheme.

Environmental problems and policies need co-ordinated appraisal as they are inextricably enmeshed in their impacts, value orientation, objectives and attainments irrespective of geopolitical barriers. Specific concern at this juncture should pin-point critical condition for success so that development becomes truly an ally for providing social justice. Obviously, there is no simple or single solution to the complex ecological, socio-economic and technological problems faced by those engaged in promoting sustainable advances in the productivity of terrestrial and aquatic farming systems. This scientific challenge can be met through accelerated efforts by blending of traditional technologies and modern science and technology. The new technologies of particular interest to agriculture are biotechnology, information technology, space technology, microelectronics and management techniques.

Biotechnology for Agriculture Improvement

Biotechnology research and application are also extremely relevant for the protection and utilization of the vast biological resources of this country, specially in the regions such as North Eastern States, Western Ghats and Himalayas. Biotechnology ultimately would ensure a rapid bioindustrial development in the country.

In the approach for the 9th Plan, a major emphasis on science and technology development and application has to be placed as the technology rich countries are the most developed one. India is a biodiversity and gene rich country but poor in technology. Therefore, it is essential to have an approach where science and technology would be an integral part of the development process. The basic objective of sustainable agriculture, sustainable development and sustainable economy can be achieved only through the inputs of modern science.

Conventional plant breeding methods have contributed greatly to the improvement of crop varieties. Inputs of modern research would further contribute towards this goal. The developing countries in general are still faced with a dual challenge of meeting the basic minimum requirements of a large population and threatened agricultural resource base. Biotechnology has emerged as one of the most innovative and powerful tools to increase the agricultural productivity on a sustainable basis. *In the field of crop productivity*, intervention of various biotechnological and new genetic engineering techniques has contributed substantially to widen our understanding of genome structure and development of transgenic plants with high quality seeds with insect disease resistance, new nutrient management practices and new bio-control agents to insecticides and chemical fertilizers. Intensification of research on all aspects of biology relating to agriculture, exchange and sharing of knowledge base and concerted efforts to involve the farming community closely with the scientists to solve location specific problems would be the main endeavours required for further.

Modern biotechnology can make important contributions to crop, livestock, forestry and fishery development. It holds promise for increasing the productivity, quality, efficient processing and utilisation of products and at the same time reduce reliance on agro-chemicals and other external inputs. In order to meet the twin objectives of accelerated production growth rate and sustainability, development and use of eco-friendly and production-enhancing technologies is of high priority. Fortunately, in recent years biotechnological research has assumed great significance and is being ushered-in to provide necessary precision and pace in genetic restructuring of crops, livestocks as well as microbes to suit the specific production regions.

Great strides have been promised for human-kind through the intervention of biotechnology in agriculture. Biotechnology promise to improve agricultural productivity, decrease our dependence on pesticides and other potentially harmful chemicals by genetically redesigning plants to offer resistance to natural and man made enemies; improve safety, nutritional and other qualities of agricultural products; improve handling, storage and processing of agricultural commodities; decrease our dependence on non-renewable resources; enhance our ability to harness marginal lands and other agroecological settings for food productions; and ensure food, nutritional and ecological security for the people.

In agriculture, horticulture and forestry, many chemical, physical and biological factors contribute to crop productivity. Most crops are endowed with a wide range of genetic variability that can be tapped by conventional breeding methods which have provided new cultivars with desirable traits such as improved yield and resistance to biotic and abiotic stress factors. New biotechnological approaches are however required as an adjunct for the genetic improvement of crops especially when certain desired traits are to be exploited. The growing interest of the developed countries in commercialisation of agricultural products is evident from the increasing number of genetically engineered products being released. According to a recent report, as of May 1996, there are about 32 products of which 18 have been approved for sale in 1995. The list of engineered crops being field tested also continues to grow rapidly. Over 40 different engineered crops are being field tested, which include cereal grain, fibre crops, ornamentals, fruits, vegetables and oil crops. Most of the increase is in the minor crops, fruits and vegetables. Biotechnology can help cross the yield plateau which now appears to have been reached for major crops largely produced and consumed by the poor. Simple biotechnologies such as micropropagation are within the reach of even the poorest people.

As far as transgenic research on crops is concerned, we are following three strategies. In crops like rice, quality markers for Durham wheats and cotton, in some of the Centres of Plant and Molecular Biology, particularly at the Bose Institute at Calcutta and the JNU at Delhi, research is underway and I hope significant progress will be achieved in the Ninth Plan. In selected areas this programme needs considerable strengthening. The second approach is to provide a framework of institutions, regulations and policy support, so that global advances can be taken advantage of by the Indian farmer in a safe and sustainable manner. The third approach is to strengthen network on a national and global plane in areas like transgenic seeds.

As regards tissue-culture propagation, we have substantial research strengths translated into commercial advantages. It is now possible to give much better service and strength to the agricultural sector. It is of particular interest that in the context of diversification and crop specialization for difficult agro-climatic regimes in the hill, plateau and arid regions, the technology provides major breakthroughs in non-cereal based food crops and horticulture and tree crops. The Department of Biotechnology will come out, we hope, with ambitious targets in this regard. There are also tremendous possibilities in the whole area of biotic fertilizers and friendly pesticides. In spite of the high economic returns to the existing techniques available, progress is slow. It is hoped that the initial extension and fiscal and policy support needed will be available to play a technologically pioneering role.

Components of Development Strategy for the Ninth Plan and Perspective

In the Ninth Plan, the strategy of development has to be mobilisational, in the sense of reaching out to those regions or sections of people who have been by-passed in the process of development and has also to aim at efficiency of resource use in areas and sectors which have already been developed. Supply side efficiency and technological transformations have to be interwoven with the economic process of production potential and in this process meet the demands of those who are currently left out of the process of development[2]. In working out the production potential in the agriculture sector, the approach of agroclimatic planning, which emphasises both land and water development strategies at the sub-regional level, is to be vigorously pursued. This approach sets specific targets for projects like tank irrigation, technological support and extension, water shed development, modernization and completion of canal system and diversification of cropping sequences in different agro-climatic regions of India.

For attainment of output targets in various sectors/subsectors in the Ninth Plan, investment levels have to be increased in critical sectors like technological support, agriculture, rural development, industry, power, tele-communications, transport, etc. With increased public investment in infrastructural facilities, private and community investment is also likely to crowd in.

The trend in a real investment in the agriculture sector is disturbing and has to be reversed. Fixed capital formation was 8.63% of agricultural GDP in 1984-85 but is only 8.55% in 1994-95 at 80/81 prices. Even if the agricultural ICOR is around 3, a 12% rate of fixed capital formation is necessary. Increasing levels of investments in the agriculture sector have to be brought about through increased public investment in technological support schemes, technological improvement, irrigation, rural communications and schemes for prevention and control of land and water degradation. The decision of the Central Government to set up a Rural Infrastructural Development Fund as announced in the Central Budget for 1995-96 will help in financing the on-going rural projects in backward areas. The cooperative sector has to participate in increased investment activities in the various sectors of the economy. Certain NABARD studies show the self help cooperatives for decentralized development can generate self-sustaining employment and income but such efforts would require initial refinancing support from outside. Training, infrastructure, including roads, quality control and processing facilities need to be set up around large agro-processing or export home demand areas in each district. The RIDF must meet this challenge, so that benefits of liberalization reach our small farmers.

Integrated water shed development projects would need to be closely monitored. Various soil and water conservation technologies will need to be energetically pursued to raise productivity in the marginal and rainfed land holdings. Improved water management strategies in irrigated and assured rain-fall areas will have to be pursued. As per preliminary estimates, the share of gross irrigated area in gross cropped areas is likely to be 46.4% by the terminal of the Ninth Plan. Emphasis will continue to be laid on diversified agriculture and crop intensification will be propagated with crop intensity reaching the level of 1.40 by 2001-02.

The output structure in the Ninth Plan needs to be so designed as to be conducive to the generation of 8-9 million employment opportunities per year. Emphasis will be laid on high employment elasticity activities like (i) animal husbandry, fisheries, horticulture, etc., (ii) sugar, fish canning and preservation; tobacco products and cotton ginning. For those who are left out of the agricultural and rural growth process, the Government is committed to an Employment Assurance Scheme.

In order to achieve the various output levels and to sustain the growing and well-diversified economy in the Ninth Plan, it is necessary to evolve judicious public policies towards investment and technology which can mobilize latent resources that are lying unutilized in the economy and can unleash wider processes of agricultural growth and decentralized developments linked to national and world markets.

The Perspective Plan in the Ninth Plan may therefore amongst other strategies have to :

i) institutionalize the Accelerated Irrigation Benefit Programme for completing large and medium irrigation programme;

ii) operationalize the strategy of perspective planning for the water sector, being worked out by the special Commission set up for this sector;

iii) raise fixed investment in the agricultural sector to at least 12% of agricultural GDP; work out the private investment inducing aspects of public investment in the water, land development, agricultural technology and research and agricultural markets sector;

iv) carry forward the agro-climatic markets sector;

v) complete the process of agricultural economy reform, including tariff reform, removal of trade bottlenecks, rural credit reform and liberalization of the cooperative sector; and

vi) work out the institutional support base for small farmers and employment for landless labourers.

References and Select Bibliography

Alagh, Y.K. et. al. (1989) *Agro-Climatic Planning:An 1989 Over-View*, New Delhi, Planning Commission.

______. (1991, 1995 Revised Edition) *Indian development planning and policy, wider studies in development economics*, New Delhi, Vikas.

______. (1993), Agro-Industrial linkages, *In* UNDP/ILLS, *Structural Reform in India and Brazil*, Sao Paolo.

______. (1993), Macro economic policies. *In* FAO *Economic Reform in Indian Agriculture*, New Delhi, FAO/ISID.

______. *(1993), Prospect for agro-based industrialization in India, Shri Ram Lecture*, New Delhi, PHD Chamber of Commerce.

Dandekar, V.N. and F.K. Wadia (1991), Agro-Climatic Planning, *Journal of Political Economy*, July.

Government of India, (1992) (1994) *Economic Survey*, 1992/92 and 1993-94 New Delhi, Ministry of Finance.

______. (1993), *Agro-Climatic planning at district level*, New Delhi, Planning Commission.

Pronk, J. and Mahabubal Haque, (1991), *Sustainable development: from concept to action*. Report of the Haque Symposium, UNDP and UNCED. *See* Y.K. Alagh, *Sustainable development: Techniques for policy makers and Ignacy Sachs, Overview*.

Rao, D.N. (1992), *Economics of Forests in India*, New Delhi, CSE.

Tyagi, D.S. (1991), *Managing India's Food Economy*, New Delhi, Sage.

Medical Curriculum to be Restructured

The Medical Council of India (MCI) proposes to revise the MBBS curriculum with effect from 1997-98 as part of efforts to provide a progressive orientation to a nearly three-decade-old study pattern.

The restructuring plan, awaiting formal approval of the Government of India, envisages added importance to the final year segment of the MBBS degree course, which involves clinical experience. From 1997-98, the MCI expects to extend the duration of the final year to two- and-a-half years while the first and second years would consume a year each. Under the existing pattern, in force for more than 30 years, the MBBS course had been divided into three equal segments of one-and-a-half years, with the first two devoted to study of basic subjects.

Dr. Ketan Desai, President of the MCI said recently in Thiruvananthapuram that the new curriculum would incorporate elements of modern medicine and delete superfluous subjects with an overall focus on generating better equipped doctors. More emphasis would be given to disciplines such as paediatrics and orthopaedics, based on the experience of these two fields dominating between 30 to 40 per cent of all medical applications. Modernisation of the medical PG curriculum (from July) on these lines was also proposed, he said.

According to the MCI President, guidelines have been drawn up to reduce staff vacancies and effect drastic cuts in minimum bed strength norms in various departments of teaching institutions.

The student-bed ratio proposed is 100:500 instead of the existing norm of 100: 700 because in several institutions, units like paediatrics, ophthalmology and ENT, were functioning as "day-care" centres where patients were discharged within an hour or so.

Each unit would have 30 beds and two teachers, one of whom be atleast an Associate Professor and the other a senior residenf practitioner besides three juniors. At the PG level, the bed strength would be in the 30-50 range and the only difference would be the additional services of an Assistant Professor.

Women in Science, Technology & Management Education

The Institute of Advanced Studies in Education, Rohilkhand University, Bareilly recently organised "A National Seminar on Women Participation in Science, Technology & Management Education". Sponsored by All India Council for Technical Education (AICTE), University Grants Commission (UGC), Deptt. of Science & Technology (DST), Govt. of India & Rohilkhand University, the seminar was inaugurated by Sri Romesh Bhandari, Governor of Uttar Pradesh & Chancellor of the university. The keynote address was delivered by Prof. D.V.Singh, Vice-Chairman, AICTE, New Delhi.

The topics discussed in the seminar included; (i) Status of Women Education; (ii) Gender Sensitivity & Barriers in Education; (iii) Perspective of Women's Career in India; (iv) Appraisal of Women involvement in Science, Technology & Management Activities; and (v) Women Empowerment & Strategies to Facilitate Equal Participation of Women.

After detailed discussion, the following recommendations emerged in areas of Education, and Entrepreneurship & Employment.

The seminar laid emphasis on *girls education* and made the following recommendations :

1. Regular interactions of parents & teachers to encourage, promote and reinforce girls/women education.

2. In order to promote girls education in areas like science, technology & management, it was essential to have their counselling at high school so that after 10+2 level, they could get the opportunity to avail of engineering, technical & management education.

3. Counselling for encouraging girl students to study the subjects, e.g., science, maths, computers etc, could be arranged with faculty members from universities/ colleges, engineering & management institutions, industry personnel, etc.

4. The constitutional provisions of free & compulsory education upto 14 years and prohibition of child labour be enforced effectively.

5. Provision of scholarship on the basis of merit-cum-means be in-

troduced for deserving girl students at secondary & tertiary levels particularly in technical, medical, management and other professional fields.

6. Separate Engineering Institutions be opened for women in IXth Five Year Plan with emphasis on courses like computer science, electronics, CAD, CAM CAI & management.

7. 30% seats may be reserved for girl candidates in technical, management, medical and other professional courses.

8. There was an urgent need to develop & produce special programmes for electronic media (TV, Radio), to change the attitude of the society towards women education, gender bias, segregation of sexes, gender roles, etc and importance of women participation in the nation building and development.

9. With the help of both print & electronic media, the awareness must be generated among masses about use of innovations of science & technology in improving the human life (health & hygiene, population management, energy & environmental protection, etc) and easier means to carry out their work (household, agricultural, business, etc).

With regard to *Enhancing Women Participation in Entrepreneurship & Employment Sectors*, the seminar recommended asunder :

1. There should be horizontal reservation in open and reserved categories (SC, ST and OBC) for women to the extent of 50% depending upon the availability of suitable candidates.

2. Vocational counselling & guidance cell be established in universities/colleges so that women/girls could get information about career prospects and courses of studies.

3. With the help of National Social Service scheme, awareness about women participation in entrepreneurship be created.

4. The seminar felt the necessity of mass awareness regarding legal rights of women in different spheres of life.

5. Media, both electronic & print, may be used by the govt. to change attitudes of masses towards women entrepreneurship and employment in scientific, technical, professional & managerial spheres.

Managing a Global Village

Prof V Ramakistayya, Vice-Chancellor, Osmania University observed that information technology would hold the key to globalisation. He was inaugurating a seminar on 'Managing a global village' organised jointly by Kasthurba Gandhi College for Women and Osmania graduates association in Hyderabad recently. He said that the present managers should have thorough knowledge of information technology in order to withstand globalised competition.

Prof Ramakistayya said the advances in information technology and communication networks had revolutionised the concept of global village erasing national boundaries. He said these changes had posed enormous challenges for all those in the management field. "The managers need more efficiency and competitiveness to survive in a changing market environment", he pointed out.

Welcoming the trend of more and more girls takings up challenging professions such as management and other such fields, he said by the turn of the century, women would out number men in these fields.

Mr T N Mishra, Director, Sardar Vallabhai Patel National Police Academy, in his keynote address, said old values were breaking at a fast rate and one needed to adopt oneself to the changing environment in all fields so as to compete in the global market. "We should think in future tense for facing the challenges in coming years," he added.

Samsung Scholarships

The Samsung India Electricals Limited has instituted scholarships for meritorious engineering and science students at IIT-Delhi and Indian Institute of Science, Bangalore.

The company is involved in various educational activities in Korea, its parent country, and as an extension of its commitment to quality management, it has in cooperation with IIT-Delhi awarded scholarships to M Sc and Ph D students at the institute.

The four scholarships, instituted last year, are granted to students of Computer Science and Engineering and Electrical Engineering Departments. The candidates are nominated on the basis of their academic achievements in the previous year. Only those who have been ranked among the top ten per cent in the previous or the current academic programme are eligible to apply. Besides, the student should have demonstrated significant achievements in the form of project work.

The scholarship is worth $1,400, which is paid once a year to the institution. Apart from monetary assistance, the selected candidate also gets an opportunity to do a summer internship in South Korea. If the student's performance is outstanding throughout the duration of the course, the company may award scholarship for an advanced study programme abroad.

Annamalai Varsity Convocation

Dr. B. Ramamurthi, noted neuro-surgeon, called upon the students of Annamalai University to be self-confident and make all-out efforts to restore to the country its past glory. He was delivering the 64th annual convocation address of the University in Annamalainagar recently.

Dr. Ramamurthi said the outgoing students of Annamalai University should have a flair for struggling in the cause of achieving great deeds. For this, the students should draw from their inner strength. Explaining the efficacy of "Yoga" in improving the efficiency of the brain cells, Dr. Ramamurthi said the inherent power available in this enormous powerhouse — available in all the brains of students — should be fully utilised, with a few to building up inner strength.

The Governor and the Chancellor of the University, Ms. M.S. Fathima Beevi, presided over the convocation. In all 42,583 students received their degrees. While 1,135 students were conferred degree in person, the remaining 41,448 got the degrees in absentia.

Dr M.G. Muthukumaraswamy, Vice-Chancellor of the university, in his annual report said the Rajah Muthiah Medical College had been granted permanent recognition by the Medical Council of India. He also said that an endowment for Rs. 20,000 and Rs. 10,000 named after the Governor and Dr. Ramamurthi would be started.

Training in Technologies for Information Handling

A five-day National Training Course on Modern Technologies for Information Handling was recently held at the All India Institute of Medical Sciences, New Delhi. The main focus of the training was on the automation of libraries, On-Line searching, CD-ROM and CD-Networking, E-Mail services, Bar-Code Technology, Multimedia Library Networking, Electronic publishing and Internet, etc.

Inaugurating the Programme, Prof. C.M. Habibullah, an eminent medical educationist, emphasised the need of training medical postgraduate students for making best use of the computer based library facilities. Prof. P.K. Dave, Director of the Institute, dwelt upon the role played by the All India Institute of Medical Sciences in providing facilities of training of personnel in all important branches of health activity. Sh. P Jayarajan, Head, Information and Library Services of the British Council, in his keynote address, stressed the need of taking into consideration the total requirements of the users of the libraries. Dr. R.P. Kumar, Chief Librarian of the Institute and coordinator of the training programme, gave a brief resume of the course contents of the training.

During the course of the training programme, the trainees were exposed to various aspects of the application of modern technologies in information handling. They also had the opportunity of interacting on the communications Network.

The topics debated in the programme included (i) On-Line Services; (ii) CD-Rom and CD-Networking; (iii) Library Networking; (iv) E-Mail Services; (v) Bar-Code Technology; and (vi) database in CD-ROM. The trainees also participated in the seminar on computer, media and communication technologies as applicable to the library. This was followed by a talk on application of LIBSYS Software package in the AIIMS Library with special reference to acquisition. The representative of LIBSYS firm gave a detailed overview about the software and its application.

Dr. M.G. Muthukumarasamy, Vice Chancellor, Annamalai University, in his valedictory address, emphasised the importance of library services for the cause of teaching, education and research. He called upon the authorities of the Institute to organise such training courses on regular basis.

The training programme was attended by about fifty participants consisting of Librarians, Information Science Specialists, Documentalists, R&D Scientists, teachers in Library Science, health scientists and computer professionals from all over the country.

Gates Stresses Education

Bill Gates, Microsoft Chairman, said that his company has decided to make investments of $35 million in developing local-language operating systems and training Indian students. It has started working with Indian companies to develop, initially, an operating system in Hindi.

At a meeting with the Prime Minister, Mr. H.D. Deve Gowda, the Microsoft chairman said the government must take the lead in building on the advantage India enjoys in its top-class manpower by linking all universities and scientific establishments through a high-quality computer communication network. In the second stage, this network should be extended to schools.

The Prime Minister told Mr. Gates that preparatory work on creating a fibre optic network for flow of communication was already under way.

In his presentation at a session organised jointly by IIT, Delhi and Microsoft India, Mr. Gates played on the same theme — education. He said five institutes, three IITs, one Indian Institute of Management (IIM) and the Indian Institute of Science, Bangalore had been identified for educating students on Microsoft systems.

Universities Talk AIDS

Sri Ramakrishna Mission Vidyalaya College of Education, Coimbatore, recently organised a two-day "Universities Talk Aids" (UTA) programme. The objectives of the programme were (i) to impart information to teacher trainees on medical and psycho-social aspects of HIV/AIDS and its prevention; and (ii) to equip the teacher-trainees to prepare and execute a plan of action for school-based activities on HIV/AIDS. Dr. M.N.G. Mani, Principal of the College in his presidential address, suggested that the school and the community should be related to each other in a symbiotic relationship of mutual benefit. He also highlighted that the role of the teacher assumed a special significance in the AIDS awareness campaign and he was the most appropriate person in the rural areas to undertake this responsibility.

Dr. Padmanabhan, Assistant Director, Adult and Continuing Education and NSS Programme Coordinator, Bharathiar University, who inaugurated the programme, stressed the importance of preventive education, specially for young students in view of the WHO estimation that at least half of all the HIV infections to date world-wide had occurred in youth between 15 and 24 years of age.

Dr. S. Ramachandran, Primary Health Centre, Perianaickenpalayam in his lecture on the "Medical Aspects of AIDS" pointed out that educating the young students regarding various issues related to HIV and AIDS could help in minimising the spread of HIV infection by developing appropriate attitudes and values in them.

The two-day UTA programme provided different learning experiences through lectures, counselling session, video programmes, competitions and exhibition. Experts invited from different fields — Sociology, Psychology, Medicine and Educational Technology — delivered talks on the various aspects of this most fatal infection In the valedictory session, Mr. Soundar- arajan, the B.Ed. trainee, gave his feed-back evaluation of the programme and expressed satisfaction about the quality and adequacy of training inputs in this programme.

It may be recalled that an awareness generation project called "Universities Talk Aids" (UTA) was conceived and launched by the Ministry of Family Welfare, Government of India, in collaboration with the World Health Organization (WHO) in 59 universities covering 29 states and union territories, to provide AIDS Education to students and to promote positive attitudes and healthy life styles among them. A National Seminar on Adolescence Education organised by the National Council of Educational Research and Training (NCERT) in April 1993 recommended AIDS Education to be one of the major components of the general framework of Teacher Training Curriculum.

G.D. Birla Award for Scientific Research

The sixth G.D. Birla Award for Scientific Research for the year 1996 has been given to Prof. Ashoke Sen of The Mehta Research Institute of Mathematics & Mathematical Physics, Allahabad. The Institute is funded by the Dept. of Atomic Energy for pursuing research in Mathemat-

AIU Hooked to Internet

We are glad to announce that The Association of Indian Universities has been hooked to the Internet. This will facilitate closer interaction with members by providing for faster communication through the Electronic Mail. Our E-mail address is **aiu@del2.vsnl.net.in** ics and Physics.

Instituted in 1991 by the K.K. Birla Foundation, the award accords recognition to high calibre scientific research undertaken by Indian scientists, below the age of 50 living and working in India. The award carries a cash prize of Rs. 1.5 lakhs.

Prof. Sen has made outstanding contribution in various areas such as : sigma model, soluble conformal field theories and recently duality. His work on string theory has been regarded as of a very high order by the best experts in the field.

Prof. Sen received the Bhatnagar Award at the young age of 38 in 1994 and now at the age of 40 he is the youngest awardee of the prestigious G.D. Birla Award for Scientific Research.

News from Agricultural Universities

World Bank Aid for ICAR

The World Bank is learnt to have given a loan of $74 million for an Agricultural Human Resource Development Project to the Indian Council for Agricultural Research (ICAR). Besides improving the quality and relevance of higher agricultural education and in-service training programmes, the project would also strengthen the capacity of participating states to develop and manage agricultural human resources.

The project, launched last year, would attempt to improve the quality of agricultural human resources by supporting infrastructure development, improvement of faculty competence and better skill development.

To reduce inbreeding between state universities and to attract talented students, the ICAR had initiated all-India entrance examination for filling up 15 per cent seats at undergraduate level and 25 per cent seats at postgraduate level, said Dr. R.S. Paroda, the Director General of ICAR in New Delhi recently.

"In the present changing scenario, when national agriculture policy is more open and liberalised, agricultural education will have to be re-oriented and the manpower generated to deal with future requirements of the country. Thus there is an emergent need to review the course curricula at the undergraduate level in different disciplines of agriculture and allied subjects," he said.

A Committee set up under the Chairmanship of Dr Kirti Singh to review the prevailing system of education has observed "great deviations and variations in the mode of admission, examination, evaluation, total credit required for degree and curriculum followed by the agricultural universities". It has made recommendations to bring uniformity among agricultural universities as far as possible, keeping the regional requirements in view and to allow inter-State mobility, avoid inbreeding, improved quality of education and turnout quality graduates for facing the challenges.

As part of the new scheme and the World Bank project, the ICAR has instituted national talent scholarship for the first time to attract talented students. It has established an Accreditation Board for maintaining norms and standards of agricultural education.

The university education has been restructured to have external examination, semester system of education, uniform grading among state agriculture universities, have rural agriculture work experience to provide skills and hands-on experience, training in new and emerging areas such as computers, agri-business, integrated pest management etc, and improve course curriculum.

The ICAR has also instituted best teacher award at university and national levels to promote excellence in teaching, have faculty competence improvement by in-service overseas training, introduced Sabbatical Leave Scheme, introduced recruitment at the level of assistant professors based on national eligibility tests, appoint heads of departments, deans, directors by direct selection and upgrade library to have internet facilities.

The ICAR is an apex body at the national level to undertake, aid, promote and coordinate agricultural research and education among 28 agricultural universities, four deemed universities and one central agricultural university, producing all together 10,000 graduates and 4000 postgraduates in various disciplines of agriculture and allied sectors.

Sir Chhotu Ram Award

Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) has invited entries for Sir Chhotu Ram National Award for the year 1996-97. The award carries a cash prize of Rs. 25000 and a citation. All scientists engaged in any field of agriculture,

social sciences, animal husbandry, forestry, fisheries, home sciences, basic sciences and humanities at national institutions, voluntary organisations, governmental or private agencies all over India by way of evolving outstanding research leading to the improvement in agriculture and rural sector of India are eligible for this award.

According to Dr. J.B. Chowdhary, Vice-Chancellor, the awardees will be adjudged by a duly approved committee on the basis of results of research/contributions made by them during the five years preceding the year of the award i.e. 1996. At the time of presentation of the award, the recipient shall present a brief account of his/her contributions on the occasion of Sir Chhotu Ram Memorial Lecture to be organised by the University shortly.

The willing scientists may send their nominations to the Professor Emeritus, Sir Chhotu Ram National Award, Department of Agricultural Economics of the University upto April 15, 1997.

News from UGC

Countrywide Classroom Programme

Between 8th and 15th April, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

8.4.97

"New Horizons"
"Living with Health : Weight Management"

10.4.97

"Exploration of Atomic Minerals-1"
"Coal-III : Earth on Fire"
"Return to Life"

12.4.97

"Wangla : A Film on Garo Festival"
"Air-Pollution-II"

13.4.97

"Abhinaya : Historinics of Dance"
"An Edifice that Meditates : The Architecture of Bahai Temple"
"Folk Rhythms-II"

15.4.97

"Superconductivity"
"Anar (Pomegranate)"
"Ocean Dynamics"

IInd Transmission

1.00 p.m. to 2.00 p.m.

8.4.97

"Environment Friendly Detergent"
"Ways of Thinking-Sep-1 Mind Matters"
"First Aid for Roadside Accidents"

9.4.97

"Budhism in Andhra Pradesh-I"
"English for Science and Technology"
"Molecular Biology : Regulation of Cell Cycle"

10.4.97

"New Horizons"
"Studying Shakespeare in Text and Performance"

11.4.97

"Postal System-II: How it works"
"Women in Development Malshiras — A case Study"

12.4.97

"Saying it with Masks"
"Understanding Cinema-XII: How Films are made-1"

13.4.97

No Telecast

14.4.97

"Study of Damping in a Harmonic Oscillator-I"
"Role of Capital Market in Indian Economy"
"Rabit Farming"

15.4.97

"Water Quality Management-1 : Water Environment and Health"
"Ways of Thinking-Sep-II: Contours of Time"
"Understanding Leprosy Disabilities"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

9.4.97

"संवेदना एक संजीवनी"

11.4.97

"परवलय - 2"

14.4.97

"औद्योगिक क्षेत्र में मानवीय संबंध - 1"
"मिखाईल बख्तिन - 2"

News from Abroad

"Women-Watch" on Internet

The three entities in the United Nations system specifically devoted to women's issues — the Division for the Advancement of Women in the Department for Policy Coordination and Sustainable Development (DPCSD), the United Nations Development Fund for Women (UNIFEM), and the International Research and Training Institute for the Advancement of Women (INSTRAW) — have pooled efforts and resources to create Women Watch, a joint space on the Internet on the advancement and empowerment of women, launched on International Women's Day, 8 March.

Women Watch is a gateway to United Nations information and data on women worldwide and an evolving electronic forum on global women's issues in the follow-up to the 1995 Fourth World Conference on Women held in Beijing. The Internet site provides up-to-date information on the United Nations work on behalf of the women of the world and on the global agenda for improving the status of women. It is designed to serve as an important contribution to the outreach programmes of its collaborating partners, providing a cost-effective means to expand outreach and networking and streamlining access to information.

Conference on Classification Research

The sixth international study conference on classification research and knowledge organisation for information retrieval will be held during 16-19 June 1997 at University College, London, U.K.

The conference is sponsored by FID/CR and University College, London in association with Association for Information Management (ASLIB), Classification Research Group (CRG) and International Society for Knowledge Organisation (ISKO) with an emphasis on the role of classification in the management of information, automatic methods of classification, classification research for retrieval of information published electronically, tools for classification, classification as a tool and data modelling.

Further details may be had from Dr IC Mcilwaine, Conference Chairman, School of Library, Archive and Information Studies, University College, Gower Street, London WC1E 6BT.

भारतीय वन्यजीव संस्थान
Wildlife Institute of India
Post Box - 18, Dehradun - 248 001
Advt. No. 1/97
ADMISSION TO M.Sc. WILDLIFE SCIENCE

Wildlife Institute of India invites applications for admission to its two year M.Sc. Wildlife Science course (affiliated to Saurashtra University, Rajkot), commencing July, 1997. A maximum of 12 (10 Indian nationals and 2 Foreign nationals) will be admitted to this course. Upto six candidates may be awarded WII fellowships.

Eligibility : 1. A bachelor of science degree with a biology major, degree in veterinary science/forestry/agricultural science/ environmental science (with a bias towards life sciences).

2. All candidates should have secured a minimum of 55% aggregate marks in their bachelor's exam. 3. A minimum of 15 years of formal education (either 10+2+3 or 11+2+2 pattern). Candidates appearing for final B.Sc. level exam can also apply provided they have secured a minimum of 50% aggregate till date, and on completion of their degree will achieve a minimum of 55% aggregate.

Age Limit : 30 years for direct candidates. 35 years for in-service candidates.

Selection : Eligible candidates will be required to appear for a written qualifying test (under graduate level) at any of the four centres: **Dehradun, Calcutta, Bangalore and Bombay**. The test will be for two hours (60% multiple choice [(General knowledge, General science, Optional subject) + 40% essays]. Personality and aptitude test will be conducted at Dehradun. SC/ST candidates called for the written and aptitude tests will be paid travelling allowance as per rule.

How to apply : Applications should be neatly typed and should include a copy of bio-data. Copies of relevant certificates to establish age, minimum qualifications, and SC/ST status, and a recent passport size photograph; apart from the above provide the following details in a separate page : 1. Full Name 2. Mailing Address 3. Date of Birth 4. SC/ST 5. Educational Qualifications *6. Choice of exam centre 7. Optional subject for test (Vet. Sc./Agri. Sc./Life Sc./Forestry)* 8. Contact numbers (Phone, Fax, E-mail). An IPO for Rs. 50/- in favour of Director, Wildlife Institute of India payable at Dehradun should accompany the application. In-service candidates should apply *through proper channel.* ***Applications should be sent to the Course Director,*** **M.Sc. (Wildlife Science), Wildlife Institute of India, Post Box - 18, Dehradun 248 001; Fax # 640117; E-mail#wii@giasd101.vsnl.net.in.** Last date for receiving applications is **5th May, 1997. Written qualifying test** is likely to be held on **8th June, 1997.**

UNIVERSITY NEWS

Readership Survey

Editorial policies of ***University News*** are currently under review. We solicit your cooperation in letting us know of your views about the present make-up of the journal. Kindly spare a few minutes to fill up the following questionnaire and mail it to us latest by 30th April 1997.

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II Occupation : ______________________________

III. Address : ______________________________

____

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- b) No

V. How do you get your copy ? :
- a) Subscribe
- b) Share with a colleague
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(b) Convocation Address	(b)
(c) Campus News (Including News from UGC, AICTE, Agricultural Universities, Abroad)	(c)
(d) Book Review	(d)
(e) Documentation (Including Theses of the Month, Research in Progress, Current Documentation in Education, Education News Index)	(e)
(f) Advertisements	(f)

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- a) OK
- b) fortnightly
- c) monthly
- d) quarterly

VIII. Should you like any of the features to be discontinued ? : If yes, please specify
- i)
- ii)

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To

The Editor
University News
Association of Indian Universities,
AIU House, 16 Kotla Marg,
New Delhi - 110 002

BOOK REVIEW

Sanskrit for Beginners

Ramesh Chaturvedi*

Veeyes Idaykidath. The Sanskrit Beginner. Trivandrum. SB Press, 1996, Pp. XIV + 146. Rs. 50/-.

Sanskrit, the most perfect language among languages is not to be conceived either as a dead language or a language which has no easier methods to learn structure, usage, vocabulary etc, other than the practice of rote memory. Sanskrit as an ancient language has its own methods to inculcate language techniques like, *'Vrddha-vyavrhara' Kosa,* method of grammar. Change of time and space too affected Sanskrit learning and language technique. Sanskrit as a medium of expression and as one of the languages taught has undergone many modifications making a room for innovations. The book presently being reviewed is a new addition to Sanskrit learning on this front.

The book is entitled *The Sanskrit Beginner.* The author 'Veeyes Idayakidath' alias, V. Surendran, is a Reader in Education at Shree Shankaracharya University of Sanskrit. The author presents in the book new techniques of learning Sanskrit, innovated by himself as a fruit of a decade long Sanskrit teaching experience. The book consisting of XV units deals specially with the new classic method, vocabulary study method, etc.

First Unit deals with alphabets though not in a conventional way. The author presenting his new method writes 'letters can be identified through words and their meanings' 'along with writing and pronunciation a reasonable vocabulary can be mastered'. Consonants are, for the practical purpose, divided into seven classes, i.e. क वर्ग, च वर्ग, ट वर्ग, त वर्ग, प वर्ग, अन्तःस्थ, ऊ माण. Vowels are divided into short and long with all sub divisions. At many places the learned author specially notes the pronunciation techniques and practices.

Unit II deals with the combinations of vowels with consonants. Here the author illustrates the combinations presenting many examples of various possibilities. Symbols to differentiate each combination are also clearly mentioned to facilitate the beginners.

Unit III Consonants with similar perception illustrates many examples of possible error writing Sanskrit letters. The author suggests vocabulary method to rectify the fault.

In Unit IV dealing with joined consonants, the author presents many examples of joined consonants. Numbers and Genders are dealt with in Unit No. V. In Unit VI, following the deductive method, the author illustrates the rules dealing with first, second and third persons in Sanskrit. In Unit VII cases (विभक्ति) are also dealt with sufficient examples and illustrations. In Unit VIII verbs and tenses are presented in the most appropriate and the easiest way along with good tips to the beginners. Illustrations on many verbal roots are mentioned. Unit IX deals with the rules of sentence formation, active voice and passive voice, etc. Useful sentences of question and answer types are added. Unit X deals with numerals and numerical expressions. Indeclinables are dealt in Unit XI. Unit XII deals with the usage of अपि, चित् चन with किम् in three genders. Unit XIII deals with the adjectives. Rules dealing with them are also clearly illustrated. Cases, their meaning and exceptions are dealt in Unit XIV. Rules dealing with कारक are simplified. Unit XV deals with translation technique. Twenty illustration of prose are given along with questions to test the knowledge. Maxims added to the unit contribute to enrich the material presented therein. Three appendices dealing with the forms of words, verbs, and numerical expression enrich the utility of the book.

It is a good book written by the learned author for Sanskrit students, particularly for the beginners. Almost all the problems pertaining to the beginners in the field of Sanskrit are successfully tackled, following his own experience and innovated method. It is a 'must' for all those who are anyway interested in Sanskrit, particularly in learning.

It would have been very useful if the author had added full bibliographical details, suggestions for further study and information. Transliteration, if provided, would have been most useful.

The book is nicely printed along with English translations. The presentation is also superb. The quality of the paper used for and format of the publication are satisfactory.

The book is of vital importance in the field of Sanskrit teaching and learning. Students can avail the benefit following the technique that the author has innovated and suggested particularly for the beginners.

**Shri Lal Bahadur Shastri Sanskrit Vidyapeeth, New Delhi-16.*

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

AGRICULTURAL & VETERINARY SCIENCES

Agriculture

1. Bikram Singh. **Genetic analysis of new sources of resistance to leaf rust in bread wheat (Triticum restiyum L.).** Punjab Agril.

2. Kanaujiya, Satya Prakash. **Effect of phosphorus and potassium with and without rhizobium inoculation on yield and quality of pea.** YS Parmar. Dr K B Rastogi, Department of Agriculture, Dr Y S Parma. University of Horticulture and Forestry, Nauni.

3. Kausale, Pandit Purbhaji. **Influence of Arhar(Cajanus cajan (L) millsp intercropping on succession and population dynamics of insect pests.** Marathwada Agril. Dr V M Pawar, Toxicologist, Pesticide Research Centre, Marathwada Agricultural University, Parbhani.

4. Madansure, Arun Narsingrao. **Bio-ecological studies on lepidopterous pod borers of pigeonpea.** Marathwada Agril. Dr V M Pawar, Toxicologist Pesticide Research Centre,Marathwada Agricultural University, Parbhani.

5. Narladkar, Wishwambhar Wamanrao. **Interspecific transfer of favourable genes from Gossypium hirsutum into Gossipium arboreum cytomorphology of introgressed genotypes.** Marathwada Agril. Dr L A Deshpande, Cotton Breeder C.R.S., Marathwada Agriculture University, Parbhani.

6. Sohan Raj. **Post-harvest mycofloral deterioration in sugar beet (Beta vulgaris L.).** Rajasthan Agril. Dr J P Agnihotri.

7 Thombre, Udhav Tulshiram. **Production, Efficacy and safety evaluation of nuclear polyhedrosis virus of helicoverpa armigera (Hubner).** Marathwada Agril. Dr V M Pawar, Toxicologist, Pesticide Research Centre, Marathwada Agricultural University, Parbhani.

Agronomy

1. Kasole, K.E. **Scheduling of irrigation and fertiliser management for main and ratoon redgram (Cajanus cajan (L.) Mill Sp.) ICPL-87.** Mahatma Phule. Dr D G Ramshe, Sub-Mountane Zone, NARP, Shenda Park, Kolhapur.

2. Manuja, Sandeep. **Studies on phosphorus and potassium economization and time of nitrogen application in maize under rainfed maize-wheat cropping system.** Himachal. Dr P C Thakur, Department of Agronomy, Himachal Pradesh University, Shimla.

3. Sugawe, Govind Tukaram. **Response of mustard (Brassica juncea L).** Marathwada Agril. Dr V B Shelke, Chief Agronomist Cropping Systems Research Centre, Marathwada Agricultural University, Parbhani.

Sericulture

1. Chikkaswamy, B.K. **Effect of foliar application of nutrients on growth, yield, quality of mulberry and silkworm cocoon crops.** Bangalore. Dr H P Puttaraju, Bangalore University, Bangalore.

2. Eswar Rao, M.S. **Improvement of Mulberry through polyploidy breeding.** Bangalore. Dr S B Dandin, Department of Agriculture, Bangalore University, Bangalore.

BIOLOGICAL SCIENCES

Biochemistry

1. Moinuddin. **Studies on antibodies against modified and fragments and their possible role in the pathogenesis of SLE.** Aligarh. Dr Asif Ali , Aligarh Muslim University, Aligarh.

Biology

1. Bhalla, Alka . **Molecular characterization of a tumorigenically transformed bloom syndrome B-lymphollastoid cell line expressing a cancer associated antigen.** JNU. Dr R N K Bamezai, Jawaharlal Nehru University, New Delhi.

2. Chauhan, Sanjay. **Photosynthetic proteins and transcript levels in wheat chloroplasts under UV-B stress.** JNU. Prof G S Singhal, Jawaharlal Nehru University, New Delhi.

Biotechnology

1. Maya, A. **An in vitro model to analyse lung epithelial proliferation and modulation of cellular responses by filarial proteins.** Anna. Dr Arun Balakrishnan, Centre for Biotechnology, Anna University, Chennai.

2. Regunathan, Jeyarani. **Cellular and humoral immune response to filarial antigens in endemic normal and bancroftian filarial patients.** Anna. Prof P Kaliraj, Centre of Bio-Technology, Anna University, Chennai.

3. Usha, S. **An in vitro study to understand mitogenic potential of linoleate on lung epithelial cells - A cellular and molecular approach.** Anna. Dr Arun Balakrishnan, Reader, Centre for Biotechnology, Anna University, Chennai.

Botany

1. Aralkar, S.D. **Leaf concentrate as a source of Vitamin.** Marathwada. Dr R N Joshi, Department of Botany, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

2. Chauhan, Pramod Kumar. **Studies on the effects of some growth regulators on modulation, growth, yield and nitrogen status in Vicia Faba.** Rohilkhand. Dr V K Vatsa, Hindu College, Moradabad.

3. Giri, Surendra Kailash. **Aeromycological studies in indoor environments of Nagpur (Maharashtra).** Nagpur. Dr (Mrs) A A Saoji, Department of Botany, Institute of Science, Nagpur.

4. Gupta, Pushpa **Phylogeny of land plants to co-banding and biochemical markers in charophyta.** Rohilkhand. Dr S K N Bhatnagar, Bareilly College, Bareilly.

5. Kapila, Ritu. **Characterization of repeated DNA sequences from crucifers and RFLP analysis.** Hamdard. Dr P S Srivastava, Hamdard University, New Delhi.

6. Malhotra, Neeru. **Studies on the effects of paper mill effluent on broad bean (Vicia Faba L.).** Rohilkhand. Dr V K Vatsa, Hindu College, Moradabad.

7. Saraswati, J. **Differential responses of physiological and biochemical parameters of Pigeonpea (Cajanus Cajan (L) Mills P.) and Amaranth (Amaranthus Paniculatus L.) to aqueous SO2.** Andhra. Prof K V Madhava Rao, Department of Botany, College of Science & Technology, Andhra University, Waltair.

8. Shah, Roshan Ara. **Physiomorphological response of triticale to sewage wastewater.** Aligarh. Dr Arif Inam, Aligarh Muslim University, Aligarh.

9. Singh, Alexendra. **Growth, modulation and productivity under salt stress in gram (Eicer arietinum L.).** Rohilkhand. Dr P Kumar, Hindu College, Moradabad.

10. Singh, Bijay Kumar. **Cytomorphological and crossability studies in brassicae.** Vinoba. Dr C Prasad, Department of Botany, Vinoba Bhave University, Hazaribag.

11. Varlakshmi, R.K. **Additions to mycoflora (Hyphomycetes).** Marathwada. Dr H B Mutsaddi, Botany Department, Deogiri College, Aurangabad.

Immunology

1. Abraham, Roshini. **Regulation of immunogenicity and tolerance by antigenpresenting cells.** JNU. Dr Satyajit Rath and Dr Vineeta Bal, Jawaharlal Nehru University, New Delhi.

2. Habib, Saman. **Investigations on the role of the homologous region 1 (hr 1) sequence in the baculovirus expression vector system.** JNU. Dr Syed E. Hasnain, Jawaharlal Nehru University, New Delhi.

3. Jaggi, Manu. **Study of peptide hormones regulating the growth of Adenocarcinoma cells.** JNU. Dr Rama Mukherjee, Jawaharlal Nehru University, Delhi.

4. Khurana, Sumit. **Structure of an Fab fragment specific for GnRH: Role of variable domain glycosylation in antigen binding and molecular packing.** JNU. Dr Dinakar M Salunke, Jawaharlal Nehru University, Delhi

5. Vattakuzhi, Mary John. **Genetic analysis of the hypervariable repeat loci in the bubalus bubalis genome.** JNU. Dr Sher Ali, Jawaharlal Nehru University, New Delhi.

Zoology

1. Aramandla Uma Rani. **The fishes of mangroves of Andhra Pradesh with special reference to some aspects of histology, histochemistry, parasitology and pathology of lates calcarifer (Bloch).** Andhra. Prof C Vijayalakshmi, Department of Zoology, College of Science & Technology, Andhra University, Waltair.

2. Bhushana Rao, T. **Studies on Ichthyofauna of Matsyagadda stream (Agency area of Visakhapatnam District A.P.) with special reference to glossogobius giuris (Hamilton-Buchanan).** Andhra. Dr K Sree Ramulu, Department of Zoology, College of Science and Technology, Andhra University, Waltair.

3. Dubey, Sanjay. **Biochemical studies on the liver and kidney of Rana Tigrina (An amphibian exposed to amino azodyes.** Rohilkhand. Dr R K Gupta, Hindu College, Moradabad.

4. Mittal, Manorama. **Studies on respiratory metabolism in a fresh water teleost CATLA CATLA induced by azodye and metals.** *Rohilkhand. Dr R C Gupta, Hindu College,* Moradabad.

5. Om Veer. **Population dynamics and ecological studies of some nematode parasites infesting hill-stream food fishes.** Rohilkhand. Dr B S Malik, Hindu College, Moradabad.

6. Raghu Prakash, R. **Studies on tolerance of the bivalve mytilopsis sallei in relation to oil pollution in the harbour waters of Visakhapatnam.** Andhra. Prof P Chandramohan, Department of Zoology, College of Science and Technology, Andhra University, Waltair.

7. Shaikh, Shamsuzzoha Imulhuda. **Toxic effect of heavy metals on some physiological aspects of crab, barytelphusa querini.** Marathwada. Dr A K Khan, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

8. *Uma Devi, K.* **Studies on morphology, biology and surface ultrastructure of two species of Haplorchine Trematodes (Digenea).** Andhra. Prof R Madhavi, Department of Zoology, *College of Science and Technology, Andhra University, Waltair.*

EARTH SYSTEM SCIENCES

Earth Science

1. Anupma Prakash. **Remote sensing-GIS based geoenvironmental studies in Jharia coalfield, India with special reference to coalmine fires.** Roorkee.

2. Ghosh, Tamal Kanti. **Inverted metamorphism in the jutogh thrust sheet around chur Himachal Pradesh.** Roorkee.

Environmental Science

1. Datta, Dilip Kumar. **Particle bound nutrients and heavy metals in the Bengal Basin.** JNU. Prof V Subramanian, Jawaharlal Nehru University, New Delhi.

2. Swamy, V.S.R. **Physico-chemical and planktonic studies on Teki Orain-Coringa River polluted by sugar factory, distillery plant and paper mill effluents.** Andhra. Prof M V Subba Rao, Department of Environmental Science, Andhra University, Waltair.

3. Tushar Baran Dev. **Molecular cloning of hyaluronic acid binding protein and its role in cellular signalling.** JNU. Prof Kasturi Datta, Jawaharlal Nehru University, New Delhi.

Geology

1. Gourshetty, Rajanna Annappa. **Hydrogeological studies of Madhura halla Basin Bider District, Karnataka State, India.** Karnatak. Dr S C Puranik, Department of Geology, Karnatak University, Dharwad.

2. Ramesh Kumar, P.V. **Mineralogy, REE-geochemistry, P-T paths microthermometry, radioactivity and tectonics of cordierite gneisses from parts of the Eastern Ghat mobile belt, India.** Andhra. Dr KKVS Raju, Department of Geology, College of Science & Technology, Andhra University, Waltair.

3. Ranganatha Gowda, G. **Geological and geochemical studies of gold bearing litho units of the parts of Gadag Schist belt in Dharwar District of Karnataka, India.** *Bangalore. Dr K S* Anantha Murthy, Department of Geology, Bangalore University, Bangalore.

4. Satyanarayanaraju, B.V. **Mineralogy and geochemistry of the anorthosites and the associated mafic rocks of Chimalpahad area, Khammam District, Andhra Pradesh.** Andhra. Prof T Ramamohana Rao, Department of Geology, College of Science and Technology, Andhra University, Waltair.

5. Shaik, Abdul. **Petrology and geochemical studies of granitoids and associated rocks occurring in Kulu-Larji-Rampur window, Himachal Pradesh, India.** Aligarh. Prof S M Zainuddin, Aligarh Muslim University, Aligarh.

ENGINEERING SCIENCES

Chemical Engineering

1. Balagopal, G. **Studies on degradative detoxification using induced biocatalysts and biosensing of xenobiotics in liquid and vapour phases.** Anna. Dr T V Subramanian, Department of Chemical Engineering, Anna University, Chennai.

2. Barai, Subhash Nathuji. **Dehydration of groundnuts in fluidized and fixed Beds (Archis, Hypoguea).** Nagpur. Dr B S Chandak, Reader, Chemical Engineering, LIT, Nagpur.

3. Vyas, Raj Kumar. **Desorption studies in a packed bed of molecular sieves using imbedded electrical heaters.** Roorkee.

Civil Engineering

1. Adel Abdel Salam Mohamad Salem. **Design of weir on permeable fundation.** Roorkee.

2. Gupta, Abhay. **Wind tunnel studies on aerodynamic interference in tall rectangular buildings.** Roorkee.

3. Jain, Pradeep Kumar. **Effect of capillarity coefficient of elastic uniform compression of silty sand beds.** Roorkee.

4. Pradeep Kumar, A.V. **Evaluation of geosynthetics in bituminous overlays over cement concrete pavements.** Bangalore. Prof C E G Justo, Department of Civil Engineering, Bangalore University, Bangalore.

5. Rajagopal, K. **Modelling for design of sedimentation operations.** Roorkee.

6. Youssef, Zeid Thabet. **Investigation of plane frame-footings-reinforced soil interaction.** Roorkee.

Electrical Engineering

1. Behera, Laxmidhar. ***Neural controllers for robot manipulators.*** IIT Delhi. *Prof M Gopal and Dr Santanu* Chaudhury, Electrical Engineering Department, Indian Institute of Technology, Delhi.

2. Maheshwari, Rudra Prakash. **Developments in adaptive relaying for transformer and line protection.** Roorkee.

3. Meena, K. **Studies on some pattern recognition tasks in remote sensing using artificial neural networks.** Anna. Dr V Ganapathy, Department of Computer Science, Anna University, Chennai.

4. Narendra Kumar. **Control of static VAR systems for improving power system performance.** Roorkee.

5. Purushottam, Y. **Development of physical models for pollution studies on HVDC insulators and bushings.** Anna. Dr K Udayakumar, Department of Electrical Engineering, Anna University, Chennai.

6. Zain, Adnan Abdulla. **An algebric approach to MDS and dual croup codes over finite abelian groups.** IIT Delhi. Dr B Sundar Rajan and Dr K S Raghavan, Electrical Engineering Department, Indian Institute of Technology, Delhi.

Engineering

1. *Alzakzook Khalil F. Mousa.* **Conjunctive use management of surface and ground water.** Roorkee.

2. Mukhopadhyay, Alok Kumar. **Condition monitoring of mine fans-Some investigations.** Dhanbad. *Prof A K Basu, Indian School of Mines, Dhanbad.*

3. Rafiq, Mohd. Qasim. ***Studies on the performance evaluation of a linearly extensible multiprocessor network.*** Roorkee.

Hydrology

1. Jose, C. Samuel. **Sediment load criteria for prioritising watersheds for resource development programmes.** *Roorkee.*

2. Katiyar, Vidya Sagar. **Hyrodological studies of disturbed mountainous watersheds.** Roorkee.

Mechanical Engineering

1. Agrawal, Mahesh Chandra. **Use of failure analysis condition monitoring and performance monitoring as a tool for maintenance management in modern cement plants.** Guru Ghasidas. Dr D S Bal, Department of Mechanical Engineering, Guru Ghasidas University, Bilaspur.

2. Arumugam, S. ***An expert system for entrepreneur development training.*** Anna. Dr V Sankaranarayanan, Ramanujan Computing Centre, Anna University, Chennai.

3. Karsanbhai, Mahyavanshi Bavjibhai. **Some studies in an annular turbine cascade with tip clearance.** IIT Delhi. Prof S M Yahya and Prof D P Agrawal, Department of Mechanical Engineering, Indian Institute of Technology, Delhi.

4. Pathak, Baldev Dutt. **Some studies of flow through inward flow radial cascade.** IIT Delhi. Prof S M Yahya and Prof D P Agrawal, Department of Mechanical Engineering, Indian Institute of Technology, Delhi.

Technology

1. Gandhi, N. Nagendra. **Effect of hydrotropes on solubili-**

ty and mass transfer. Anna. Mr N Sathyamurthy, Professor of Chemical Engineering, ACT, Anna University, Chennai.

2. K.M. Meera Sheriffa Begum. **Studies on extraction of aromatics from lubricating oil feed-stocks in liquid-liquid equilibrium still and rotary disc contactor.** Anna. Dr C M Lakshmanan, Professor of Chemical Engineering, Alagappa College of Technology, Anna University, Chennai.

3. Mathur, Avinash Kumar. **A study of determinants of adoption and productivity of rural technology : The case of sericulture technology in Dehradun District (U.P.).** IIT Delhi. Prof Mira Madan and Prof P Vasudevan, Centre for Rural Development and Technology, Indian Institute of Technology, Delhi.

Textile Technology

1. Raichurkar, P.P. **Silk fabric handle.** Anna. Dr V Subramaniam, Department of Textile Technology, Anna University, Chennai.

PHYSICAL SCIENCES

Chemistry

1. Agarwal, Ritu. **Development of some strategies for separation and immobilization of proteins/enzymes.** IIT Delhi. Prof M N Gupta, Department of Chemistry, Indian Insititute of Technology, Delhi.

2. Ahuja, Ravinder. ***Redox reactions of organic compounds* involving radical ions.** Rohilkhand. Dr Yogendra Bhadur, Bareilly College, Bareilly

3. Anita. **Graft copolymerization of vinyl monomers onto gelatin by mutual irradiation method.** Himachal. Department of Chemistry, Himachal Pradesh University, Shimla.

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6. Aruna Sree, P. **Synthetic studies and characterisation of new liquid crystalline materials.** Andhra. Dr Y L N Murty, Department of Chemistry, College of Science and Technology, Andhra University, Waltair.

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8. Ashok Kumar. **Studies on titanium (III)and vanadium (IV) complexes.** Rohilkhand. Dr Shamim Ahmad, Bareilly College, Bareilly.

9. Avneesh Kumar. **Analogous biomoleculer-Synthesis and their physicochemical characterization.** Rohilkhand. Dr R B Singh, Bareilly College, Bareilly.

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11. Basker, A. **Spectral and electro-chemical studies on some carbonyl compounds and their derivatives.** Algappa.

12. Bawa, Sandhya. **Synthesis of potential biologically active *compounds and studies on prodrugs*.** *Hamdard. Dr M S Y* Khan, Hamdard University, New Delhi.

13. Bharat, Girija Kumari. **Studies of single and multicomponent adsorption of organic pollutants on granular activated carban (GAC) from aqueous phase.** Nagpur. Dr G S Natrajan, Professor Applied Physical Chemistry, L.I.T., Nagpur University, Nagpur.

14. Bhardwaj, Anil. **Synthesis and applications of some polymeric reagents in organic synthesis.** Himachal. Department of Chemistry, Himachal Pradesh University, Shimla.

15. Dhar, Nirmal. **Synthesis of some new nitrogen heterocyclic compounds of potential pharmacological interest and their pharmaceutical evaluation.** Hamdard. Dr M S Y Khan, Hamdard University, New Delhi.

16. Drabu, Sushma. **Study of some natural products and synthetic compounds.** Hamdard. Dr M S Y Khan, Hamdard University, New Delhi.

17. Dubey, S.M. **Synthesis of some new potential local anaesthetics.** Rohilkhand. Dr S C Mehra, Bareilly College, Bareilly.

18. Dwivedi, Mithalesh Kumar. **Development of Sensors for heavy metals and their removal by slag-A blast furnance waste material.** Roorkee.

19. Eswaramoorthy, M. **Synthesis, modification and characterisation of Na13x, NaY, AlPO-5 and AlPO-11 Zeolites/Molecular sieves and their application in aromatisation of 3-carene.** Anna. Dr V Krishnasamy, Department of Chemistry, Anna University, Chennai.

20. Eswaramoorthy, M. **Synthesis, modification and characterisation of Na13X, NaY, AlPO-5 and AlPO-11 zeolites/molecular sieves and their application in aromatisation of 3-carene.** Anna. Dr V Krishnasamy, Professor of Chemistry, A.C.T., Anna University, Chennai.

21. Gairola, Priti. **Studies on nucleophilic substitution reactions of some nitro activated aromatic substrates.** Roorkee.

22. Geetha, K. **Studies on self assembling characteristics and polymerisation reaction of poly ethyleneoxide macromonomer.** Anna. Dr Asit Bavan Mandal, Inorganic Chemistry Division, CLRI, Adyar, Chennai.

23. Ghoshal, Sib Krishna. **Kinetics of defect mediated structural phase transitions.** JNU. Prof S Dattagupta, Jawaharlal Nehru University, New Delhi.

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Krishnasamy, Department of Chemical Engineering, Anna University, Chennai.

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33. Kirti. **Physico-chemical behaviour of aqueous and non-aqueous solutions of amphilic moleicules in presence of additives.** Aligarh. Prof. Kabiruddin, Aligarh Muslim University, Aligarh.

34. Marikkannu, C. **Characterization of passivation of metals and alloys - chemical passivation treatments.** Algappa.

35. Musa Afif Ahmad Said. **Rings and cages containing phosphorus, arsenic and antimony.** Hyderabad. Dr K C Kumara Swamy, Department of Chemistry, University of Hyderabad, Hyderabad.

36. Nair, Sreejith M. **Electrical Conductivity and phase transition studies in ionic materials.** Aligarh. Dr Afaq Ahmad, Aligarh Muslim University, Aligarh.

37. Periasamy, P. **Studies on the performance of iron as a battery electrode in alkaline solution.** Alagappa.

38. Rastogi, Kalika. **Physico-chemical studies of bidentate schiff base metal complexes.** Rohilkhand. Dr B D Kansal, Hindu College, Ruhilkhand University, Bareilly.

39. Rathore, Bhuwan Chandra. **Biochemical studies on River Ganga water pollution at Moradabad (U.P.).** Rohilkhand. Dr Nepal Singh, Hindu College, Moradabad.

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41. Renukeshwar, H.C. **Studies on opioid peptides and new methodologies for peptide synthesis.** Bangalore. Dr K M Sivanandaiah, Department of Chemistry, Bangalore University, Bangalore.

42. Sandeep Kumar. **Residual and persistence study of new herbicides fluazif butyl and anilgphus.** Rohilkhand. Dr S K Kulshrestha, Hindu College, Moradabad.

43. *Sarraf, Samta*. **Phytochemical study of some medicinal plant.** Rohilkhand. Dr A C Ojha, S.G. College, Najibabad.

44. Sathya Prasanna. **Organic semiconductors based on a monoanion-dianion system and the tetrathiafulvalene-tetraazafulvalene class of complexes.** Hyderabad. Dr T P Radhakrishnan, Department of Chemistry, University of Hyderabad, Hyderabad.

45. Sharma, Sanjay. **Studies on prodrugs and synthesis of new heterocyclic compounds.** Hamdard. Dr M S Y Khan, Hamdard University, New Delhi.

46. Siddiqui, Anis Ahmad. **Chemical and pharmacological study of some naturally occurring and synthetic compounds.** Hamdard. Dr M S Y Khan, Hamdard University, New Delhi.

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48. Soujanya, T. **Photophysical and theoretical studies on some fluorophores with intramolecular charge transfer excited states.** Hyderabad. Dr Anunay Samanta, Department of Chemistry, University of Hyderabad, Hyderabad.

49. Srinivas, Y. **Spectrophotometry as a tool for the assay and kinetic study of some reactions involving bio-active compounds.** Andhra. Prof Ch. Suryaprakasa Sastry, School of Chemistry College of Science and Technology, Andhra University, Waltair.

50. Tandon, Nidhi. **Some biochemical studies of cases suffering from diabetic nephropathy and their A-B-U susceptibility.** Rohilkhand. Dr R K Agarwal, Bareilly College, Bareilly.

51. Totagi, Ramappa Shivaputrappa. **Studies in heterocyclic compounds of pharmacological interest.** Karnatak. Dr L D Basanagoudar, Department of Chemistry, Karnatak University, Dharwad.

52. Tyagi, Rashmi. **Synthesis of some carbonyl compounds, useful as insect attractants.** Rohilkhand. Dr A K Agarwal, Bareilly College, Bareilly.

53. Tyagi, Suniti. **Chemical examination of some medicinal plants of Shiwalik Hills.** Rohilkhand. Dr A C Ojha, Sahu Jain College, Najibabad.

Physics

1. *Anjaneyulu, A.* ***Vibrational spectra and normal coordinate treatment of some substituted benzaldehydes.*** Kakatiya. Prof G Ramana Rao, Principal, University P.G. College (KU), Godavarikhani, Karimnagar.

2. Aripoanammal, S. **Electrical transport properties of some chalcogenide compounds under high pressure.** Anna. Dr S Natarajan, Department of Physics, Anna University, Chennai.

3. Chandrasekhar, K. **Study of ultra fast phenomena in molecules.** Karnatak. Dr D C Patil, Department of Physics, Karnataka University, Dharwad.

4. **Chhag, Smita B. A Study of E-impact ionization of at-**

oma. Saurashtra. Dr V M Chhaya, Saurashtra University, Rajkot.

5. Gupta, Seema. **Some aspects of coulomb break-up problem: Atomic ionization.** Roorkee.

6. Hamid Rezagholipour Dizaji. **Modelling of liquid phase epitaxial growth of some III-V binary, ternary and quaternary compound semiconductors.** Anna. Dr R Dhanasekaran, Alagappa University, Karaikudi.

7. Iqbal, M.I. **Computer interfacing aspects and applications in physics.** Marathwada. Dr S S Shah, Department of Physics, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

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9. Joseph Kumar, F. **Nucleation kinetics of vapour-liquid and solution-crystal systems and growth and characterization of KTiOPO4.** Anna. *Dr. C. Subramanian, Director*, Crystal Growth Centre, Anna University, Chennai.

10. Kalpana, G. **Electronic band structure and properties of some alkaline-earth chalcogenides and fluorohalides and high pressure phases of Te and Se.** Anna. Dr M Rajagopalan, College of Engineering, Anna University, Chennai.

11. Krishna, T.S.V.R. **Ecology of the seaweeds from the gulf *of kutchh, with some special reference to alginophytes.*** Saurashtra. Dr M S Murthi, Department of Physics, Saurashtra University, Rajkot.

12. Krishnamurthy, D. **Czochralski growth of oxide crystals and the analysis of associated growth difficulties.** Anna. Dr C Subramanian, Crystal Growth Centre, Anna University, Chennai.

13. Lakshmi, S. **Crystal structure analysis of compounds of biological interest.** Anna. *Dr K Subramanian, Professor of* Physics, Anna University, Chennai.

14. Manimaran, M. **Instrumentation of computer controlled crystal growth system and crystallization and characterization of medium bandgap II-IV-V2 semiconducting infrared nonlinear optical materials and organic biomolecules.** Anna. Dr C Subramanian, Crystal Growth Centre, Anna University, Chennai.

15. Mukesh Kumar. **Effect of welding parameters of the structure properties and silt erosion in 13/4 martensitic stainless steel.** Roorkee.

16. Patil, Rajesh Ramchandra. **Thermoluminescence and lattice defects in some lithium compounds.** Nagpur. Shri S V Moharil, Lecturer, Department of Physics, Nagpur University, Nagpur.

17. Ramnathan, Akilan. **Structure, Conformation, Anti-bacterial and anti-corrosion studies of substituted thiourea derivatives.** Anna. Dr K Sivakumar, Lecturer in Physics, College of Engineering, Anna University, Chennai.

18. Sagayaraj, P. **Studies on the growth and characterisation of single crystals of lead (II) chloride, lead (II) bromide and lead chlorobromide.** Anna. Dr F D Gananam, Department of Chemical Engineering, Anna University, Chennai.

19. Savariraj, A. **Study of force fields in higher order vibrational problems involving Newton-Raphson's iteration technique.** Anna. Dr S Gnanasekaran, College of Engineering, Anna University, Chennai.

20. Shaji Kumar, M.D. **Fabrication of a flame fusion apparatus and crystallization of laser and superconducting substrate materials.** Anna. Dr C Subramanian, Crystal Growth Centre, Anna University, Madras.

21. Sudha, L. **Crystal structure analysis of guanidines and quinolones and a study on binding of guanidines with calf thymus DNA.** Anna. Dr K Subramanian, College of Engineering, Anna Univeresity, Chennai.

22. Tafreshi, Majid Jafar. **Growth of II-VI, I-III-VI2 and CdIn2S4 single crystals by chemical vapour transport and their characterization.** Anna. Dr C Subramanian, Crystal Growth Centre, Anna University, Chennai.

MATHEMATICAL SCIENCES

Mathematics

1. Arun Kumar. **A study of the mean values and growth of logarithmic, entire and analytic functions in the extended plane.** Rohilkhand. Dr B D Gupta, Vardhman College, Bijnor.l.

2. Jain, Neelam. **Numerical conformal mappings and their applications.** Roorkee.

3. Joginder Singh. **Some characterization theorems in thermal and thermohaline convection.** Himachal. Department of Mathematics, Himachal Pradesh University, Shimla.

4. Nishat Parveen. **A study random-2 normal spaces.** Rohilkhand. Dr Ahmad Khan, Govt. Raza P.G. College, Rampur.

5. Palaniappan, N. **Regular generalized cosed sets.** Algappa.

6. Srilatha, K.R. **Development of analytical and numerical methods for analysis and synthesis of natural laminar flow airfoils.** Bangalore. Dr K S Harinath, Department of Mathematics, *Bangalore University, Bangalore.*

7. Uma, M. **Interface instability of superposed fluids in three dimensions.** Anna. Dr M Arunachalam, Department of Mathematics, College of Engineering, Anna University, Chennai.

Statistics

1. Asantha Kumar, E. **Extended strategies in unequal probability sampling.** Bangalore. Dr T Srivenkataramana and Prof N Sundararaj, Department of Statistics, Bangalore University, Bangalore.

MEDICAL SCIENCES

Medicine

1. Ahmad Jamal. **Efficacy of enalapril in postponing nephropathy in normotensive diabetic patients with persistent microalbuminuria.** Aligarh. Aligarh Muslim University, Aligarh.

Pharmacy

1. Mengi, Sushma A. **Study of ophthalmic drugs.** SNDT. Dr S G Deshpande, Head, Department of PGSR in Pharmacy, Juhu, Mumbai.

2. Rahmat, Molani. **Development of some new drug delivery systems.** Kakatiya. *Prof D Rambau*, University college of Pharmaceutical Sciences, kakatiya University, Warangal.

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It is three semester course which grooms the students for a high profile career in design of electronic products.

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He should have been serving in Academic Institution/Electronic industry/R&D organisation/engaged in electronic product or system development for at least two years and should produce necessary sponsorship certificate along with application in the prescribed form.

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Selection of candidates for both the courses will be made on the basis of a written test to be conducted in Aurangabad.

The entrance test & interview for M.Tech. will be conducted in July 1997 and is basically an aptitude test in electronic product design. The test for DEPM course is of two hours duration and covers Mathematics and Science of SSC standard. It will be conducted in the month of June 1997. The test may be conducted in

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Name of Units	Last date for obtaining forms for			Cost of appln. forms/brochure for	
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CENTRAL INSTITUTE OF PSYCHIATRY

KANKE, RANCHI-834006

ADMISSION TO POSTGRADUATE COURSES -1997 SESSION

Applications are invited from eligible candidates for admission to the following postgraduate degree/diploma courses of the Ranchi University and conducted at this Institute, commencing from 1st August 1997.

GROUP A

1. M.D. Psychiatry - 6 seats

Duration : 3 years

Qualification : M.B.B.S. degree of a University recognised by Medical Council of India, with one year rotating internship completed by June 1997.

2. Diploma in Psychological Medicine - 12 seats

Duration : 2 years

Qualification : M.B.B.S. degree of a University recognised by Medical Council of India, with one year rotating internship completed by June 1997

GROUP B

1. Ph.D. in Clinical Psychology - 4 seats

(subject to availability of faculty)

Duration : Three years for M.A. (Psychology) degree holders and two years *after D.M.& S.P./M.Phil in Medical and Social Psychology*

Qualification : *First Class Master's degree in* Psychology *or Diploma/M.Phil in* Medical and Social Psychology for 3-Year and 2-Year courses respectively.

2. M.Phil in Medical and Social Psychology - 12 seats

(subject to availability of faculty)

Duration : Two years

Qualification : M.A. in Psychology of a recognised University with minimum *50% marks in the aggregate.*

3. M.Phil in Psychiatric Social Work - 6 seats

Duration : 2 years

Qualification : M.A. in Sociology or *Social Work of a* recognised University with minimum 50% marks in the aggregate.

GROUP C

1. Diploma in Psychiatric Nursing - 12 seats

Duration : One year

Qualification : A Grade Certificate or Diploma in General Nursing and Midwifery

Experience : Two years experience as Staff Nurse

Group A -Selected candidates may be considered for Residency Scheme as applicable to Central Government Institutions

Group B *- Selected candidates may be considered for scholarship of Rs. 850/- per month*

Group C - Selected candidates may be considered for stipend of Rs. 250/- per month

Note : The number of seats in each discipline is subject to change without assigning any reason.

The last date for receipt of completed applications on prescribed form is **28th May 1997.** Incomplete applications will not be considered. The Institute will not *be responsible for any postal delay in receipt of completed application form*

15% and 71/2% seats are reserved for Scheduled Caste and Scheduled Tribe *candidates subject to availability of such candidates*

Forms may be obtained free of cost from the Director, Central Institute of Psychiatry, Kanke, Ranchi-834006, by sending a self addressed and Rs. 4/- *stamped envelope of 25 cms x 10 cms size, or by hand, till* **18th May 1997.** "For Applications Form" should be inscribed at the top of the envelope containing the request for the prospectus and form. Name of the course for which the application form is required, should also be clearly mentioned to facilitate supply of proper application form.

From the pool of applications, suitable candidates would be asked to appear for written examination and interview at this Institute in the first week of July, after which the final selection will be made.

davp 7463(9)96

CLASSIFIED ADVERTISEMENTS

BAPTIST COLLEGE

MISSION COMPOUND, KOHIMA
NAGALAND - 797 001

ADVERTISEMENT

March 14, 1997

Applications are invited on plain paper for the undermentioned posts of Lecturer in the pay scale of Rs. 2200-4000, plus other admissible allowances of this college. **Applications should reach the undersigned latest by April-19, 1997** with full bio-data, photocopies of qualification documents and experience certificate/s - if any. And come with **original documents to the College Office for interview on April 22, 1997 at 10:00 A.M.**

Applicants must have atleast 55% of marks or equivalent grade at their Master's level *(below 55% or equivalent grade need not apply)* and *proficiency in English.*

S. No.	Subject/Department	No. of Post	Require Specialization
1.	Commerce	... 3 nos.	.. a) Fin. Accounting & Adv. Accounting b) Incometax law and Practice & Adv. Cost Accounting c) Management Accounting & Fin. Management d) Quantitative Technique Analysis and Operation Research.
2.	English	... 3 nos.	
3.	Education	... 2 nos.	
4	Economics	... 2 nos.	
5.	History	.. 2 nos.	
6	Political Science	. 2 nos.	
7.	Sociology	... 1 no.	

PRINCIPAL

S.H. COLLEGE,

THEVARA

WANTED

Junior Lecturers (both community and open quota) for the vacancies likely to arise in Physics, Chemistry and History subject to Government, University and UGC norms and regulations. Appointment will be for Pre-degree category and no claim for appointment to the UGC Scheme vacancies. The qualification will be P.G. with 50% mark and B.Ed. Age: completed 22 years and is not above 35 years as on 1.1.1997. *For High School Assistants in the General Education Dept. there is no age limit.* Application forms can be obtained from the college office on payment of Rs. 100/- (Rs. 110/- by post). Apply within 30 days of this notification to: **THE MANAGER S. H. College, Thevara, Kochi-682 013.**

M.E.S. COLLEGE OF ARTS & COMMERCE

ZUARINAGAR, GOA

Invites applications for the following posts :

1.Lecturer in Accountancy/ Commerce	-	3 Post
2.Lecturer in Economics	-	1 Post.
3.Lecturer in Sociology	-	1 Post.

All these posts advertised for the FIRST *time are reserved for candidates* belonging to scheduled castes/tribes. As such for these posts candidates from RESERVED categories only should apply.

Academic Qualifications:- (i) Master's Degree in the relevant subject (i.e. minimum 6 papers) with atleast 55% marks or its equivalent grade (ii) Good academic record and (iii) Candidates should have cleared the Eligibility Test for Lecturers conducted by U.G.C., C.S.I.R. or similar tests accredited by U.G.C.

In case candidates having passed the said eligibility test or candidates from RESERVED categories are not available, candidates fulfilling other conditions would be considered for appointment on purely temporary basis for one year.

Scale of Pay :- Rs. 2200-75-2800-100-4000 plus admissible allowances.

Service Conditions :- As prescribed by *Goa University, Director of Higher Education,* Govt. of Goa and other competent authorities.

Persons who are already employed shall send their applications through proper channel. Break in service, if any, should be accounted for.

Interested candidates should apply giving full details of academic qualifications from SSC onwards clearly indicating the subjects offered, marks scored and class/division obtained at all public examinations, teaching experience, address, date of birth etc.

True copies of caste certificate and mark statements of all public examinations passed should be enclosed.

Applications duly completed in all respect should reach the Principal within 15 days from the date of publication of this advertisement.

M. S. Kamat
PRINCIPAL

NIRMALA INSTITUTE OF EDUCATION

ALTINHO, PANAJI, GOA 403 001

"Applications with full bio-data are invited for the temporary post of B.Ed Lecturer for the academic year 1997-98.

Candidates applying for this post should have opted for Special Method English and should be able to teach Environmental Education (B.Ed.) and Philosophical Foundations of Education.

Candidates must have good academic record with at least 55% marks or an equivalent grade at the M.Ed. degree from an Indian University or any equivalent degree from a foreign University. Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers conducted by the UGC, CSIR or similar test acredited by the UGC. However if such candidates are not available or found suitable general category candidates will be considered for the appointment.

Scale of Pay: Rs. 2200-4000., and other admissible allowances as per rules.

Terms and conditions of service are those laid down by Goa University/Directorate of Education, Goa and other competent authorities.

Applications with relevant details should reach the Principal, Nirmala Institute of Education, Panaji **within fifteen days** from the date of advertisement.

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ALI YAVAR JUNG NATIONAL INSTITUTE FOR THE HEARING HANDICAPPED

K.C. Marg, Bandra Reclamation, Bandra (W), Mumbai - 400 050.

An autonomous institution of the Ministry of Welfare, Govt. of India & recognized institute of Rehabilitation Council of India, invites applications for admission to the following courses for Academic Year 1997-98.

ADMISSION NOTICE

No.	Course/Centre Univ. Affiliation	Duration	Eligibility
1.	B.Ed. (HI) Mumbai Univ. B.Ed. (HH) *Calcutta Univ.* B.Spl.Ed. Osmania Univ., Hyderabad. B.Ed. (H.H) New Delhi	One Year	Degree in any discipline with *minimum 50% marks & entrance* test for Osmania University only. Proposed to be started at Delhi
2.	B.Sc (ASR) Audiology & Speech Rehab. Mumbai Univ. & B.Sc (HLS) Hearing, Language & Speech; Osmania Univ. Hyderabad & Calcutta University.	Three Years	12th Std. (10+2) scheme or equivalent examination with minimum 50% marks with English, other Language+Physics, Chemistry & Biology (PCB) at Mumbai & PCB or Mathematics(PCM) at Calcutta & Hyderabad + Entrance Test for Osmania University.
3.	#Diploma in Hearing, Language & Speech (DHLS) at New Delhi.	One Year	12th Std. OR equivalent in science subjects with II class / 50% marks
4.	*Diploma in Education of Hearing Impaired* (H.I) at New Delhi, # Calcutta, #Hyderabad #Bhubaneshwar, Valakom, Bengalore, Madras, Allahabad, Nagpur, Bhilwara	One Year	12th Std. OR as equivalent in any discipline with 50% marks / IInd class
5.	M.Sc. (ASR) Audiology & Speech *Rehabilitation affiliated to University of* Mumbai & M.Sc. (HLS) affiliated to Osmania University, Hyderabad.	Two Years	B.Sc. (ASR/HLS/Speech & Hearing) *or any other degree from any Indian* or foreign university considered as equivalent. Entrance examination for Osmania University only
6.	M.Ed. (H.I.) affiliated to Mumbai University	One Year	**(A)** B.Ed(HI) Mumbai University or any other degree/PG Diploma considered equivalent by Mumbai University with 50% / II class or B.Ed(General) + Diploma in Education of Hearing Impaired D.Ed (HI) of AYJNIHH/RC) with 50% / II class. **(B)** 2 years experience as teacher of Hearing Imp. (relaxable at the discretion of selection committee) **(C)** Age 30 yrs (Relaxable upto 40 yrs for SC/ST & Sponsored candidates)
	M.Ed(HI) SRC, Hyderabad		*Proposed to be started at Hyderabad* subject to getting affiliation

# Course may not be held if adequate number of candidates are not available/other administrative reasons.

Reservation : Seats for SC/ST/DTNT/OBC and foreign students are reserved as per Central Government rules/University guidelines

Candidates called for entrance examination/interview have to attend the same at their own cost.

Students from other than Mumbai University/Maharashtra Board of Secondary Certificate, upon selection for admission to courses at NIHH should produce eligibility certificate from Mumbai University failing which their selection stands cancelled

Last date for issue of application and receipt of completed application alongwith necessary certificates for courses is **9th May 1997** for D.Ed/B.Ed; **10th June, 1997** for B.Sc/M.Ed. & **10th July, 1997** for M.Sc. (ASR)/(HLS) courses. Candidates appearing for qualifying examinations in April/May 1997 may also apply. However, their applications will be considered only if their results & statement of marks are received before the stipulated last dates.

Incomplete applications, not accompanied with required certificates or received after the last date are liable to be rejected. Selected candidates will only be communicated. No other interim communication/enquiries will be entertained.

Prescribed application form and Prospectus can be obtained in person or by post from **Academic Cell, AYJNIHH, Mumbai** at the above address on payment of **Rs. 30/-** by crossed **Demand Draft** only, *drawn in favour of* ***"THE DIRECTOR, AYJNIHH"*** *payable at* **Mumbai** **(CASH, IPO, CHEQUES WILL NOT BE ACCEPTED)** (Rs. 20/- in case of SC/ST on production of certificate from competent authority). If requested by post, write clearly on the top of the envelope **request for application form & prospectus** and enclose a self addressed envelope of 23 x 16 cms with **postage stamp of Rs. 7/- firmly** affixed on it.

SHASTRI INDO-CANADIAN INSTITUTE
INDIA OFFICE

Advertisement for Administrative Director's Position

Shastri Indo-Canadian Institute seeks an Administrative Director in its India Office to lead an *established Humanities and Social Sciences Programme in India Studies*, Canadian Studies Programme and Development Studies Programme. The programme operations are funded in Canada by the Department of Foreign Affairs and International Trade, Government of Canada, Canadian International Development Agency and member Universities. In India, they are funded by Department of Education, Ministry of Human Resource Development, Government of India.

Position Requires

- Person at the mid-career level in a senior administrative position with training and experience in institutional development and development issues.
- *Atleast a high second class masters degree, or a higher qualification, in any of the following* discipline or related to : Public Administration, Modern History, International Relations, Public Policy, Economics, Political Science. Studies in more than one of these areas is desirable.
- Effective communication and human relations skills.
- Leadership in coordinating the staff activities as needed.
- Understanding of the importance and range of research and academic relations possible between Canada and India.
- Ability to collaborate with the Institute's Canada Office in the areas of international development strategies, policies, conceptual papers and the execution of programmes and projects in India.
- Experience in programme administration and human resource management.
- Proven ability to work with Governments, NGOs, Academic Organizations, Universities, Individual Scholars and other constituents of the Institute.
- Understanding and ability to work with electronic equipment and computer technology.
- Proficiency in English, with very good drafting ability (knowledge of Hindi desirable).

Qualified applicants are invited to send cover letters and resume (in duplicate) by **April 26, 1997**, including salary history to :

Vice President, India Office
Shastri Indo-Canadian Institute,
5, Bhai Vir Singh Marg,
New Delhi 110 001.

Salary commensurate to the experience and qualifications *of the applicant*, in the range of Rs. 15,000/- to Rs. 20,000/- per month inclusive of benefits. Only applicants who best match the requirements of the position will be acknowledged.

Those who are in employ of State or Central Government or autonomous/statutory bodies must route their applications through the employers with the specific recommendations and willingness to permit them to take up the assignment *once selected and appointed*. They may send an advance copy of the application.

INDIAN INSTITUTE OF TECHNOLOGY
KHARAGPUR

Admission to Postgraduate Programme 1997-98

Applications are invited for admission to the 3-Semester **M.Tech.**, **M.C.P.** programme of the Institute in different specialisations in the Autumn Semester of 1997-98. The courses are offered by the departments of Aerospace Engg., Agri & Food Engg., Arch. & Reg. Planning, Chemical Engg., Civil Engg., Compo. Sc. & Engg., Electrical Engg., Electronics & Elec. Comm. Engg., Geology & Geophysics, Humanities & Social Sciences, Industrial Engg. & Management, Mathematics, Mechanical Engg., Metallurgical & Materials Engg., Mining Engg., Ocean Engg. & Naval Arch., Physics & Meteorology and Centres of Cryogenic, Materials Science and Rubber Tech.

Eligibility : Regular Candidates : Applicants should have a B.Tech/B.Arch/M.Sc. or equivalent degree and must possess a valid GATE score. Candidates having professional qualification like AMIE, recognised by the AICTE are also eligible for admission

Sponsored Candidates : Persons with above mentioned or equivalent qualification obtaining at least 60% marks at the qualifying examination and having Two years experience working in industry/R&D organisations may apply for. They need not have qualified at GATE.

Self-Supporting candidates : Qualified candidates having at least 60% marks can be considered for admission under this category subject to satisfying a test & interview. They need not have qualified in GATE

Selection : For all Regular candidates (except those with Professional qualification, XE XL,XP and SE registration number in GATE) selection will be based on merit (GATE score) Selection of sponsored candidates will be made on the basis of performance at personal interview and for the Self-Supporting candidates selection with be made on the basis of written test followed by interview and the regular candidates with XE, XL, XP GATE registration number will be selected by interview as well as merit at GATE

Assistantship : All regular candidates with necessary GATE score are entitled to financial assistance towards Part-time Teaching Assistantship of Rs. 1800/- p.m. (likely to be raised) subject to the conditions prescribed by the regulations

M.S. Programme : This programme, open to only Sponsored and Self-Supporting candidates, lays more emphasis on research work. The normal duration of the programme shall be 2 years. However, the minimum residential requirement is of one semester Eligibility requirement for admission shall be the same as for M Tech programme

Application : Blank Application Form and Information Brochure can be obtained on payment of a fee of Rs 250/- in cash from the following branches of Canara Bank :

(1) Bangalore, 112 J.C. Road, Pin - 560 002
(2) Bhubaneswar, Plot No.3, Bapuji Nagar, Pin - 751 009
(3) Bhopal, Berasia Road, Pin - 462 001
(4) Chennai, TC St. Branch, PO Box 127, 154 TC St., Pin - 600 001
(5) Calcutta: NICCO House, 2 Hare Street, Pin-700 001
(6) Calcutta: 9/10 Raja S.C. Mallick Road, Jadavpur, Pin - 700 032
(7) Delhi, H 54, Bombay Life Building, Cannaught Circus Pin - 110 001
(8) Guwahati. 14A Hem Barua Road, Fancy Bazar, Pin - 781 001
(9) Kharagpur, Fatak Bazar, Kharida, Pin - 721 301
(10) Hyderabad, PO Box 4, 4-1-954, Abid Road, Pin - 500 001
(11) Mumbai, No.65 Sonawala Building, B.S Marg, Pin - 400 023
(12) Nagpur, Sadar Bazar Branch, Residency Road, Pin - 440 001
(13) Patna, P.Box No.132, South Gandhi Maidan, Pin - 800 001
(14) Visakhapatnam, 28-10-3/B, Ist Floor, Surya Bagh, Pin - 530 020

Blank Application Form and Information Brochure can also be obtained from the **Deputy Registrar (Academic), IIT Kharagpur 721 302** by post on sending the fee of Rs. 250/- by crossed bank draft drawn on **Kharagpur Branch** in favour of IIT Kharagpur payable at State Bank of India, Kharagpur (Code 0202) and enclosing two self-addressed slips (5cm x 10cm size) with the request letter

Issue of Application Form at Bank Counters	:	**2 April, 1997**
Last date for issue of application form by post (only from Office of the Deputy Registrar (Academic)	:	**28 April, 1997**
by hand from Bank counters	:	**07 May, 1997**
Last date for receipt of completed application form at the Office of the Deputy Registrar (Academic)	:	**09th May, 1997**

Dy. Registrar (Academic)

IAS/IIT/2-97

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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 14 APRIL 7, 1997 Rs 9.00

Tezpur University
— A Profile

GURUPDESH SINGH

Academic Staff Colleges
— An Assessment

ANAND G. FADNIS

Concept Learning by Concept Maps

B. TAMILMANI & S. MANIVEL

Extension in the Curriculum of Cooperation
— The Experience of GRI

S.K. GUPTA

Educational Research in North-East

RAJA J. CHELLIAH

Meeting the Challenge of the West
— Convocation Address

Association of Indian Universities

Enter a unique management career

Announcing the Post-graduate Diploma Programme in Hospital and Health Management 1997-99

(Recognised by AICTE)

THE PROGRAMME

This is a two-year, full-time programme leading to a Post-graduate Diploma in Hospital Management or in Health Management. It aims at preparing professional managers for hospitals and other health care organisations, in both the public and the private sectors.

The programme is recognised by **All India Council for Technical Education (AICTE),** under the Ministry of H.R.D., Government of India.

THE INSTITUTE

Established in 1984, IIHMR is the first of its kind in India, with attention focussed solely on health systems management. The institute undertakes training, research and consultancy in health management in close collaboration with the Ministry of Health & Family Welfare, state health departments, ICMR and international organisations like UNICEF, World Bank, WHO, ILO, USAID, Ford Foundation, DANIDA, etc.

The institute is recognised by the Department of Science and Technology and the Ministry of Finance, Government of India, as a research institution. It is also accredited to the International Hospital Federation, UK, and the Association of University Programmes in Health Administration, USA.

ELIGIBILITY

Graduates in any subject from a recognised University with minimum 50% marks in the aggregate. Those appearing in final year exam in 1997 are also eligible to apply. Mid-career professionals in health and related areas are also eligible for admission.

ADMISSION PROCEDURE

A Specialized Management Aptitude Test (MAT) is conducted by All India Management Association (AIMA-CME), for IIHMR, at Calcutta, Chennai, Delhi, Hyderabad, Jaipur, Lucknow and Mumbai (centres subject to change). Mid-career professionals, NRIs, and NRI-sponsored and foreign candidates are exempted from specialized MAT.

MAT Date : Sunday, May 25, 1997

Candidates selected through the test will be called for group discussion and personal interview at Jaipur.

Prospectus and Application forms for IIHMR and MAT can be obtained by sending DD/IPO for Rs. 400/- favouring **IIHMR, Jaipur,** payable at Jaipur to **Director, IIHMR, Jaipur** or **Information Centre, All India Management Association, AIMA-CME, Management House, 14 Institutional Area, Lodi Road, New Delhi-110 003.**

NRIs, NRI-sponsored foreign candidates can obtain the Prospectus and Application Form on payment of US $20.00 from IIHMR, Jaipur.

Last date for Receipt of Completed Application Forms :

- **April 30, 1997 for fresh graduates to be sent to AIMA, New Delhi.**
- **May 30, 1997 for mid-career professionals, NRIs, and NRI-sponsored and foreign candidates to be sent to IIHMR, Jaipur.**

IIHMR

Indian Institute of Health Management Research

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Fax : 91-141-550119 • Gram : HEALTHINST
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UNIVERSITY NEWS

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

Tezpur University
A Profile

Tezpur University, Tezpur, hosts the East Zone Vice-*Chancellors' Conference on April 13, 1997.*

Introduction

Tezpur University established under an Act of Parliament ("The Tezpur University Act" No. 45 of 1993), is a teaching and residential unitary type Central University at Tezpur in the district of Sonitpur, Assam. The University has come into being on and from 15 January, 1994. This Central University has been established under historic Tripartite Assam Accord, 1985 between the Government of India, the All Assam Students' Union (AASU) and the All Assam Gana Sangram Parishad (AAGSP) bringing an end to the almost six years long mass agitation on the vexed foreigners issue in the state. Although the Central Government decided to set up the Central University in Barak Valley, the fresh struggle of the people of the state for a university in the north bank of the Brahmaputra forced the government to set up two central universities simultaneously in Assam. This was the situation under which the Tezpur University was set up, with a distinction in its objectives and nature, as a non-affiliating university with the idea of developing it as Centre of Excellence.

Objects

Tezpur University is to pay special attention to the improvement of the social and economic condition and welfare of the people of Assam through education, research, training and extension services. The objects as specified in the Act are as follows :

(i) to offer employment-oriented and inter-disciplinary courses to meet the local and regional aspiration and the development needs of the state of Assam;

(ii) to offer courses and promote research in areas which are of special and direct relevance to the region and in emerging areas in science & technology;

(iii) to promote national integration and study of rich cultural heritage of the region and in particular, the diverse ethnic, linguistic and tribal cultures of the state;

(iv) to utilise distant education techniques and modern communication for large segments of the population, and in particular the disadvantaged groups such as those living in remote and rural areas; to upgrade the professional knowledge and skill of in-service personnel in particular school teachers, medical personnel and extension staff, to provide opportunities for life long learning for adults;

(v) to make provisions for integrated courses in humanities, natural and physical sciences, agricultural sciences and forestry and other allied disciplines in the educational programmes of the University;

(vi) to take appropriate measures for promoting innovations in teaching learning process;

(vii) to educate and train manpower for the development of the State of Assam, and intellect of the people of the State.

The chief objectives of the University are to contribute towards the well being of the people of the region and State of Assam and for this purpose teaching, research, training and extension activities of the University have a bias towards Science & Technology, Job and employment-oriented support to weaker section of the society, Appropriate technology innovation, Rural employment and development, Study and research on cultural heritage, Rural development, and National integration.

Perspective Plan

The Vice-Chancellor, Prof. K.M. Pathak, an eminent scholar with specialisation in Nuclear Physics and Futurology in his Approach Profile made a twenty year projection on the plans and programmes with due regard to the objects of the university and the regional and national need of the present day and upto the next two decades. The Approach Profile covering areas like campus, type of buildings, library, academic session, choice of programmes, method of teaching and evaluation, resource mobilisation, support services, centralised facilities, uplinking facilities, centralised catering facilities for students, faculties and staff, inhouse management, administrative and financial management, was approved by the Board of Management in the very beginning. In fact, the present development of the university is the implementation of the perspective plan step by step depending on the flow of fund and such other conditions.

Campus

The permanent campus of the university with an area of 243 (approximately) acres of land is located at Napaam, about 15 km from the Tezpur town. Free from pollution and surrounded by small villages, the sacred precinct is being developed phase wise with the ultimate objective of transforming it into a centre of academic excellence as envisaged in the Act and the vice-chancellor's approach profile. Two Men's Hostels have been built with a central cafeteria facility on the campus. The campus is now converted to a centre of learning with the shifting of two academic departments, the library and a few administrative units and the residence of the male students to the Napaam campus. Besides the construction of buildings, the Department of Telecommunication is installing an electronic exchange on the campus. In the next few months, the university would be able to shift its offices and the existing departments at Napaam. A comprehensive plan for creating the infrastructure with an estimated outlay of Rs. 7803.55 lakhs has been prepared with the target date of completion being 31 March, 2002.

Teaching Departments & Programmes

The University started P.G. courses in three disciplines — Computer Science, Mathematical Sciences and English & Foreign Languages (formerly Centre for English Language Teaching) in the very first year of its inception in July, 1994. From January, next year, the P.G. Department of Business Administration was started. The year 1996 witnessed the starting of two more P.G. Departments — the Department of Traditional Culture and Art Forms and the Department of Energy, the two being unique in nature and not offered elsewhere in the north eastern region. With this the number of departments that went into teaching programme stood at six upto December, 1996. This year (1997) the University is going to start P.G. courses in four more disciplines — Information Science & Technology (M.Tech), Electronics (M.E.), Molecular Biology & Biotechnology (M.Sc) and Chemical Sciences with emphasis on Master's programme in Polymer Science and P.G. Diploma in Plastic Technology, P.G. Diploma programme in Computer Application. Besides, actions on starting Master's programme in Physics, Mass Communication & Journalism and a Centre for Disaster Management have been initiated.

The teaching departments started and proposed to be started during the IXth Plan have been identified by the Vice-Chancellor Prof. Pathak in his perspective plan with the mission of generating human resources which would be able to take up jobs in the fast changing world and would provide meaningful services to the society. Keeping in view the technical changes the world is bound to pass through, and the globalization of education, the action plan for the IXth Plan gives emphasis on technology-related, employment-oriented courses, women education, regional development and national integration and promotion of excellence and quality in education.

The IXth Plan proposals aim at achieving Interdisciplinary programmes with cafeteria approach; Developing research support and university-industry interaction; Improvement in examination system; Develop support systems for quantitative improvement; Developing social schemes for woman and weaker sections of the society; Developing programmes for rural development; Developing new stream of continuing education to function in the new economic environment; Providing extension education; and Providing specific studies on culture and ethnic diversity of the North Eastern region for national integration.

For achieving the above broad objectives thrust is given to : Interdisciplinary course of studies, Relevant courses of studies, Area studies, Examination System, Infrastructure Development, Faculty Improvement Programme, Mass Communication Centre, Accreditation, Removal of Regional Imbalance, imparting globally acceptable Technology, wide application of Information Technology and so on.

The teaching and research programmes of various disciplines are conducted through the four Schools of Studies (i) School of Science & Technology; (ii) School of Humanities and Social Sciences; (iii) School of Management Sciences; and (iv) School of Energy, Environment & Natural Resources.

The teaching departments have been placed under each of the above four schools of studies. The proposed centres of studies are being attached either to the relevant department or being set up as independent, subject to the overall control of the concerned school of study.

Besides the ten departments, the following departments and centres are proposed to be introduced during the IX Plan.

Departments	*Centres*
Physics	Disaster Management
Business Economics	Rural Development
Mass Communication & Journalism	Fashion Technology
Banking & Financial Management	Instrumentation
Environmental Science & Technology	Shankardeva Study
Sociology	Performing Art
	Population & Demographic Studies
	Tourism Management
	Forest Management
	Physical Education
	Natural Resource Management
	Wet Land Management

In addition, the development of the Computer Centre and starting of a Central Workshop and Documentation Centre as central facilities are on the agenda under IXth Plan.

The courses of study offered and those proposed are in essence career-oriented programmes to meet the demands generated by changes in the global economy, technology and competition. The recent observation made by Dr. A.P.J. Kalam, Scientific Advisor to the Ministry of Defence, Government of India on "Technology vision 2020" in India has been more relevant so far as the major technology bias courses of study at Tezpur University are concerned.

The concept of imparting simply theoretical knowledge has been replaced by education for facing the real challenges of the day. The University has also started a Training and Placement unit under a Deputy Director. This unit liases with business and industry, corporate sector, government departments, etc in the matter of training as envisaged in the curriculum and the placement of the passing out students.

Academic Session

The academic session of the University is divided into two semesters (three trimesters for MBA) viz. Spring — January to June, and Autumn — July to December of a calendar year. 220 to 230 working days in a year are maintained. Attendance of students is compulsory. For attendance, with 75% above the students are awarded marks upto a maximum of five as per laid down rules.

Examination & Evaluation

Examination and evaluation of students are done on semester/trimester system. Evaluation of a student is made on the basis of his/her performance in tutorials, home tasks, periodic tests, attendance in classes and final examinations at the end of each semester/trimester. The evaluation system is designed on the principle of continuous evaluation to test the students' systematic progress and total ability rather than a chance achievement in a single examination. 60 per cent weightage is given to continuous evaluation and 40 per cent to performance in the semester/trimester-end examinations. A six point letter grade system has been employed to asses the performance of a student in a unit. To discourage selective study for the purpose of examination no overall option is given in a question paper. All questions are to be answered. However, there is provision for internal option in a question. The evaluation system is more transparent. A student, on demand, can check his evaluated answer sheets as per laid down rules.

A salient feature of the pattern of courses followed here is that students irrespective of the courses of study are admitted to, are to demonstrate an acceptable level of proficiency in Spoken English and Computer literacy, the two audit (non-credit) courses. Passing the tests in the audit courses is a precondition for the award of the degree/diploma.

The examinations for each semester/trimester are completed within the semester/trimester and the results are declared on or before last day of the semester/trimester.

Research & Extension

Research programmes, during the past three years and a quarter have been undertaken by some of the faculty members for Ph.D. under the guidance and supervision of the eligible Professors/Readers. Part time research scholars registered with the university include non-resident Indians (USA based). Besides doctoral research, some sponsored projects are also being cleared soon. The research programme is envisaged to be undertaken so as to meet the need of the industries vis a vis the economy.

Extension programme undertaken by the University so far include motivation of educated youths for entrepreneurship development, preparing students to face interviews for recruitment, proficiency in English speaking, conservation of energy, use of non-conventional energy, training of teachers to teach English and Mathematics at the secondary level of education.

Faculty Development

As part of the Faculty Development programme, the teachers of the University are being encouraged to attend regional/national/international workshop/seminar/symposia/congress, etc with and without papers. Besides, visit to the institutes of importance for effective interaction with their counterparts is also permitted.

Visit of eminent scholars in various disciplines from within and outside the country as Guest Faculty/Visiting Fellow/Visiting Lecturer, etc is duly emphasized. This has contributed in a bigger way towards the standard of education. Prof. P.K. Mackewon, an eminent scientist of Hong Kong, Dr. Raymond Mackay, an ELT specialist from UK are some of the scholars from abroad who conducted teaching programme here.

Library

The central library started in 1994 in a rented house at the temporary campus of the University has now been shifted to Napaam campus The library is developing with the acquisition of books, journals, periodicals, etc and more importantly participation in networking and application of information technology. Automation of library has been started. The data base has been created using the CDS/ISIS package. The Electronic Mail (E-mail), a facilitator to the libraries for networking in India has been introduced. It is to be noted that the entire North Eastern region has some basic problems in application of the latest innovation of information technology as there is no other network in Assam except the NICNET. The ERNET and INET have proposed to set up modes in Assam shortly. The UGC through INFLIBNET has, however, taken a bold step towards application of information technology. The University has also a plan to install a VASAT with a view to entering into the information super highway in course of time. This will also contribute a lot towards improvement of the library.

Student Welfare

Students welfare is yet another important segment of the university functioning. At present the students are provided with residential facilities, transport, health care, and minimum facility for participation in games and sports and such other extracurricular activities. During the IX plan, a sports complex, an auditorium would be constructed which would go a long way in the development of student welfare.

Resource Mobilisation

In the context of resource crunch facing the Indian universities, the Tezpur University is also making sincere efforts for mobilisation of resources on its own. Revenue earning courses have been started. Prospective donors in and outside the country have been contacted for making their contribution in supplementing the resource base created out of the government funding. Besides, the receipt of Rs. 1.0 lakh from a local donor late N.C. Kath Hazarika for promotion of a departmental library, the Trade & Industry Limited, Tezpur has agreed to sponsor a scholarship. The Magor Education Trust has also selected two MBA students for award of scholarship. *The US based Ford Foundation* has also agreed to provide with $2,00,000 towards the setting up of a Regional Resource Centre for promotion of folk culture of the north eastern region attached to the Department of Traditional Culture & Art Forms.

Feedback

Only two batches have completed their Master's programme so far. It is, however, worth mentioning that the MBAs are proving themselves to be the best to be selected for managerial posts in some reputed organisation of the country. Similarly, the students of MCA are also being considered for suitable placement.

Conclusion

The Tezpur University is on the move towards progress and academic excellence. Performance of the university may be considered from the observations of Sri S.R. Bommai, Hon'ble Union Minister for Human Resource Development, which I quote below : "Tezpur University has been playing a vital role in bringing about improvement in educational infrastructure of the North Eastern Region in general and Assam in particular.... I am sure that the dedicated leadership of the Vice Chancellor and the devoted services of the faculty and management of this University will impart to this institution an edifice of unparalleled academic eminence. I hope that the intentions espoused by the University to play a catalytic role in imparting socially relevant knowledge and skills to the students through its teaching and extension programmes meet the desired level of success."

The Tezpur University is committed to further the values enshrined in our Constitution and make sustained efforts to effectuate the dreams of the great visionaries of our country for uplifting the socio economic standards of the people, especially in the rural and backward areas.

COLLEGE OF BUSINESS STUDIES
(UNIVERSITY OF DELHI)
ADMISSION NOTICE

BACHELOR OF BUSINESS STUDIES (1997-2000)
(THREE YEAR FULL TIME DEGREE PROGRAMME BEGINNING JULY 1997)

Eligibility Conditions : (a) Candidates seeking admission to the BSS programme must be 17 years of age before October 1, 1997.

(b) He/She must have passed the Senior Secondary Examination of the CBSE (or equivalent) with an aggregate of at least 60% marks in his/her best four papers including English. Rest of the three papers are required to be from amongst the following papers only; Mathematics, Physics, Chemistry, Biology, Accountancy, Business Studies, Economics, Psychology, History, Political Science, Social Science, Geography and Computer Science. For Scheduled Caste (SC), Scheduled Tribe (ST), and Wards/Widows of armed personnel killed/disabled in action during the hostilities (WW) the eligibility limit shall be 55%.

(c) Students appearing for the Senior Secondary (or equivalent) Examination in 1997 can also apply.

Mode of Selection : Applicants shall be called for an objective type written test to be held on **Sunday, the June 8, 1997 at Calcutta, Chandigarh, Delhi, Kanpur and Mumbai**. Qualifying candidates shall be called for group discussion and interview at the college premises.

How to Apply : Candidates can obtain one set of brochure-cum-form from the college office by hand by submitting a crossed bank draft issued by State Bank of India, payable at Delhi/New Delhi for Rs. 310/- (General Category) or Rs. 185/- (SC/ST Categories) or Rs. 60/- (WW Category) drawn in favour of '**Principal, College of Business Studies, Delhi**. Candidates must write their full name, category, postal address and choice of examination centre at the back of the bank draft. *Cash/Money Order & Postal Order etc, will not be accepted.* Candidates (outstation only), wanting application form by post, must also send a self-addressed, stamped (Rs. 10/-) envelope of 23 cm x 30 cm size and a photocopy of both side of the bank draft alongwith the bank draft by superscribing the envelope "Purchase of Application Form". Candidates purchasing application form by hand from the college counter are also required to submit a photocopy of both sides of the bank draft. **Completed application forms must reach the Administrative Officer, College of Business Studies, Vivek Vihar, Delhi-110 095 on or before May 2, 1997.**

DR. R.M. SINGH (PRINCIPAL)

ACADEMIC STAFF COLLEGES
An Assessment

Gurupdesh Singh*

While charting out our educational priorities, the New Education Policy (1986) rightly admitted that higher education deserves a place of special importance because 'it can provide ideas and men to give shape to the future and also sustain all the other levels of education.' At the same time it lamented the fact that the teachers are not accorded proper opportunities for professional and career development and are therefore, not sufficiently oriented in techniques and values to carry out innovative and creative work to fulfil their roles and responsibilities. In order to overcome these difficulties, it proposed that specially designed orientation and refresher courses be organised for teachers as instruments of in-service training and continuing education. Academic Staff Orientation Scheme, as initiated by the University Grants Commission in 1987, is the immediate outcome of these recommendations.

The concept of in-service training and continuing education is not new to the Indian educational planning. Recommendations to this effect were made as early as 1949 in the Radhakrishnan Commission's report and later reiterated in 1964-66 by the Kothari Commission. Following the direction, the University Grants Commission had been, no doubt, creating some facilities in the form of seminars, fellowships and summer schools, yet it was left to that major policy statement of 1986 to give it an organised and institutional shape within the overall framework of university system. In 1987, the Commission in one stroke established 45 new teacher training institutions under the name of Academic Staff Colleges (probably as a parallel to the Administrative Staff College).

The philosophy behind the urgency of such a massive launch was the ever expanding scenario of decline in educational quality. In statistical terms, the higher education system had grown more than tenfold in the last 40 years. Compared to 19 universities and 650 colleges in 1947, the country had over 200 universities and nearly 7500 colleges in the 1980's. As the existing system was not built to take on this massive task of producing the required manpower, the expansion resulted in the all-round lowering of standards in education. Secondly, the explosion of knowledge in the recent years has been phenomenal. It was absolutely impossible to cope up with the vast generation of new information, technology and methods, without resorting to accelerated and organised modes of continuing education. The Academic Staff Orientation Scheme, was therefore conceived with the urgent need of upholding the academic standards and reinforcing that role of education which, in the Indian context, is seen as an instrument of social and economic change.

Programmes

Under this scheme, which has now been running for the last 10 years, three kinds of programmes have been conceived

i) to organise specially designed orientation programmes of 4 weeks duration for all new entrants at the level of lecturers;

ii) to organise refresher courses of 3-4 weeks duration for serving teachers to cover every teacher at least once in five years; and

iii) to organise short-term orientation programmes for the senior academicians and administrators, Heads of departments, Principals of colleges, etc.

Although universities in the country already had some experience in the organisation of refresher courses in respective subjects and had also probably developed a core model for them over the years, yet this Scheme has introduced the special features of development of subject-special skills, marked emphasis on methodological strategies and production of relevant teaching material for classroom effectiveness.

The orientation courses, as proposed, were an entirely new entity and posed a bigger challenge, as no model anywhere existed for the benefit of planners. The format of an ordinary B.Ed. course could not match the concept and philosophy of this programme, as such was found unsuitable. The need of the programme, as proposed, is to inculcate in the young lecturer the quality of self development through his awareness of social, intellectual and moral environment. These programmes should prepare him for self discovery, so that he can assume that dynamic role that will help us achieve our democratic goals and make our education relevant and meaningful. The order is tall, that is why, one of the salient features that has been built in this programme is autonomy and flexibility. Each Academic Staff College has been given the freedom to plan and execute the programme in such a way that the participants are able to achieve the following avowed objectives :

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i) to understand the significance of education in general and higher education in particular, in the global and Indian context;

ii) to understand the linkage between education and economic and socio-cultural development with special reference to Indian polity, and to understand the role that a teacher can play in the achievement to national goals of secularism and egalitarianism;

iii) to develop a philosophy of life and consequently a philosophy of education;

iv) to understand the principles of pedagogy and to relate the conceptual and methodological developments in their subjects to enhance the basic skills of teaching;

v) to utilize opportunities for development of personality, initiative and creativity; and

vi) to learn the principles of management — organisational, human and self.

The course is spread over a period of 4 weeks and constitutes a minimum of 144 contact hours. Although a sample illustrative list of topics have been suggested by the UGC, yet each Academic Staff College makes its own choice of topics and modes of instruction depending upon its intellectual resources and academic preferences to bring out the results. Despite the differences that may occur in the choice of topics, the organisers of the programme are completely in agreement that the instruction be imparted only in the interactive mode. *This means that discussion, workshop, demonstration, hands-on practical work, seminar and research training, etc are integral part of the teaching process.* As far as possible, the number of plain lectures is restricted to the minimum. The philosophy of interaction, which is at the heart of this programme, is best reflected in the designations that the programme assigns to its interlocutors. The trainee teachers *are neither teachers nor students, but are* called participants; similarly, the trainer teachers also cease to be teachers in the traditional sense, but become resource persons. The idea is that both the sides benefit from mutual sharing to knowledge and learning becomes a process of understanding and refinement.

In the third programme of the Scheme i.e. short-term orientation courses for the senior administrators, each College has been asked to arrange once every year a meeting of the Heads of the departments and Principals of colleges to apprise them of the needs and modalities of training, so that they can also be made partners in the enterprise of orientation programmes. It is believed that no amount of training to the young teachers can bring the desired results unless senior academicians and administrators at the top provide the right kind of leadership and create congenial work atmosphere for the creative abilities of the newly oriented teachers. These meetings are supposed to prepare our seniors for the new supervisory roles, whereby they are able to see *modification in attitude and academic approach* as an essential instrument for social and national reconstruction.

Achievements

As is obvious, Academic Staff Orientation Scheme is basically an awake-arise-and-do-something call by our educational planners to the leaders of the academic community, who have been assigned the task of motivating our teachers and cultivating in them the essential qualities of a good teacher. No doubt, we understand that motivation for quality primarily stems from within, yet opportunities *like these do provide the necessary inducement* and direction for it. Therefore, in order to promote participation in these programmes, the UGC has also linked their successful completion to career development and higher pay grades. In the beginning, it was recommended that confirmation of newly appointed lecturers shall be tied up with the attendance of an orientation course, but in actual practice, it got linked with the time-bound job promotion policy, where each teacher has been asked to complete at least two courses before he qualifies for placement in the senior or selection scale. This, to a great extent, had added to the importance of these courses.

As the scheme and the idea of academic orientation was new, most of the Academic Staff Colleges were slow to start with, but then gradually picked up the momentum. At present all the 45 colleges are doing well and in about 9 years, by the end of March, 1996, had conducted in all 3636 courses of which 1237 are orientation programmes. The average number of courses being offered each year comes to 404, which in turn suggests that on an average each college is offering 9 courses per year. The total number of teachers who have done these courses is 1,02,955, out of which 35,261 have attended the general orieatation courses, while the rest participated in refresher courses in their respective subjects. In terms of average numbers, more than 10,000 teachers are getting trained each year. These figures may not sound very encouraging compared to the strength of the total teachers engaged in our institutions of higher education, but considering the fact that most of the colleges really got into their rhythm only in the last five years, the achievement does not seem a small one. Moreover, despite the programmes being wholly financed by the state, the cost per course per head has rarely exceeded Rs. 4000, as a result these programmes have turned out to be the most cost effective propositions. In all, the UGC has so far spent a little over 60 crores on this Scheme, which, by all means, is only peanuts compared to the results achieved in such a short span.

However, even at this stage, a big disparity exists in terms of the number of programmes being organised at different colleges. Some colleges are able to organise as many as 30 programmes in a year, whereas some others do only 10. The reasons are not far to seek. The Commission despite realising the usefulness of such programmes is able to finance this scheme only in limited way. At present, the Scheme is being run on a plan to plan basis, as such the nature of the Scheme is temporary and funds are available as per the cost of the number of actual programmes, besides some mandatory disbursements for the core staff and other academic activities. No funds are available for creating the infrastructure required for the smooth conduct of these programmes. Therefore, those colleges that have the liberal backing of their parent universities and have been able to get the necessary support for their infrastructural, administrative and financial needs have done well compared to their other less fortunate counterparts. Most of the colleges do not have a regular faculty, since the positions are not of the permanent nature and competent senior teachers refrain from accepting tenure jobs.

Another important factor that needs mention here is that the scheme of organisation of refresher courses in various subjects is being implemented in a less centralised manner than that of the orientation courses. The figures that have been mentioned above with respect to the refresher courses cover only the number of programmes that have been conducted under the auspices of the Academic Staff Colleges. In actual, there are more than 80 other institutions in the country that have been directly entrusted with the task of organising refresher courses in different subjects. At present no consolidated data about their activities is available. However, it does indicate towards ambivalence in the Commission's policy on these courses. Following this ambiguity, many Academic Staff Colleges have also passed on the task of organising the refresher courses to the respective departments of the University. This considerably reduces their load, yet at the same time multiplies the number of their total courses.

Quality Control and Assessment

Notwithstanding these minor variations in the quantitative achievements, the real success of this Scheme has to be gauged in terms of the quality assurance and attitudinal and intellectual changes that the participants realise during those 3-4 weeks. From the reports received from the various ASCs over the years, it has been found that each College has been adopting varied strategies, depending upon its resources and areas of priority, for achieving the objectives of the programme. There is no compulsion to cover all the components of the course. Different courses may find different components and themes highlighted depending upon the needs of the participants. Many colleges have devised an entry level proforma, which may indicate the information and motivational level of the participants, which subsequently sets the tone and direction of the course. Resource persons too, need not always be academicians. A variety of professionals chosen from the fields of administration, journalism, industry, consultancy, social service, literature, etc are being involved for the benefit of young teachers.

As the core curriculum of the these courses focuses on the teaching and research skills of the teachers, a variety of practical methods are being employed to actively involve the participants in the development of these skills. The reports suggest that academic activities like micro teaching, seminar writing, report writing, book review, term paper writing, video monitoring, library consultation, computer training, curriculum development, material production, field study, extension work, etc have become regular features in most of the orientation programmes. Some of the colleges have successfully produced reading material, which is being used at various stages of university education. This variety in teaching techniques and approaches has imparted the much needed dynamism in the daily routines of a course, which with the surfeit of lecturing something gets too heavy and uninteresting.

Although the Scheme insisted even in its earliest document that evaluation of the participants and the course is an integral part of the programme, yet it is only recently that the ASCs have woken up to its importance. It has been debated regularly at various fora that multiple monitoring of these courses should be undertaken. Consequently, in the last five years, most of the colleges have introduced some instruments of evaluation, which are administered at different stages of the course. Each resource person is now being evaluated by the participating teachers, who in turn, are evaluated by their peers, resource persons and the course coordinator on the quality of their assignments and classroom presentation, daily reports, active participation in both academic and organisational tasks, regularity, discipline, etc. Although not in practice yet, some sort of grading system is being proposed to mark the successful completion of course by each participant. Nearly all ASCs get an end-of-the-course evaluation done by the participants, which gives them the necessary feedback in terms of the impact and effectiveness of the course. This kind of self evaluation and routine monitoring has substantially changed the quality of these programmes. The teacher participants who in the initial years were wary of facing evaluation by their peers and seniors and were reluctant to give an honest opinion on their resource persons are now opening up to such demands. The teaching community, which for too long had been spared the risk of accountability is being given a little jolt and made to realise that the fruit of this evaluation is professional development and self empowerment.

The best indicator of the quality of such programmes is, of course, some kind of a long term impact study. Nevertheless, the immediate reactions of some of the teachers after completing these courses have been found to be very encouraging. Compliments like the following have been recorded by some participants in their course evaluation reports :

- The programme has inspired me to do away with the monologue; the lecture method and to adopt the method of interaction with the students.
- The course inspired us to participate in other fields also and to make teaching/learning more effective.
- I felt inspired to do Ph.D.
- I learnt about the qualities of indepth knowledge, rational thinking, clarity of mind and the art of public speaking.
- The programme has inspired me to do better in the profession of teaching.

The real success of a course and the Scheme shall be realised when the intellectual and attitudinal gains of the teachers are passed on to the students in their day to day classroom interaction. At this point of time, it is far too early to expect this from the Scheme. The ASCs are still in the growing stage, some of them even toddlers, barely able to stand steadily, as such long term expectations will have to wait for a while. Also teacher and his work values cannot be taken in isolation from the rest of the country's work environment. Larger changes, therefore, may require larger effort with wider sweep and deeper penetration. In the short term, if the Scheme is able to sensitise some of our teachers to the harshness of our socio-economic reality and motivate them to put in their best as teachers for its improvement, we should assume that enough has been achieved.

Suggestions for Improvement

Academic Staff Orientation Scheme must be one of the very few schemes of the UGC, which with the minimum of cost, inadequate infrastructure ad hoc faculty and absence of any role models has done extremely well to justify its existence and relevance. The planners can congratulate themselves for realising that there are no inherent flaws in the conception and execution of this Scheme; the only ones, if there are any, can be found in its operational development. It would, therefore, be in the interest of all concerned that the Scheme is strengthened further by providing all the necessary support and keeping a vigil on its proper implementation. Some of the steps that can help in this direction are as follows :

a) The adhoc nature of the institution of Academic Staff Colleges should be done away with. It must be accorded a permanent place in the university higher education system. However, it should not be mistaken as another department of a university.

The features of autonomy, flexibility and innovation that characterise its functioning should be retained. Proper faculty employment norms, even contractual if need be, should be established to engage full time faculty with proper training and competence in teacher training. By adding sightly to the present budget of this Scheme, basic infrastructural facilities like classrooms and hostels can be provided on a need based basis to solve the operational difficulties of some of the Colleges.

b) The idea of in-service training is fine, but we cannot ignore that orientation courses must be organised before one joins the profession. The values and the training that one will start with can easily sustain a teacher for a few initial years against the cynicism that otherwise has beset this profession. In the absence of such a training, the young teachers tend to drift with the peer group currents and become hard nuts to crack when they sign up for these courses.

c) At present the UGC has completely delinked the Academic Staff Colleges from the short term programmes like seminars, conferences, workshops, symposia, etc. No doubt, right now, many teachers are reporting for these programmes, (under whatever compulsions), but a lot of them resent being away from their homes for 3 to 4 weeks. It would be better, therefore, to expand the scope of the programmes of the ASC, and to include the activities that are being, at present, organised under the UGC unassigned grants. The participant teachers can go on accumulating points by attending short and long programmes, which can later be computed for career development and higher grades.

d) There is an urgent need for faculty development and orientation programmes for the leaders in this enterprises. The ASC faculty should collaborate with sister institutions like National Academy of Administration, Mussourie and Administrative Staff College, Hyderabad for sharing techniques and strategies of training. The coordinators and resource persons being engaged for these programmes should also be given orientation about the interactive techniques of teaching. Most important of all, the Principals of colleges have to be convinced about the usefulness of such programmes. Although this kind of orientation is on the agenda of the ASCs, yet not much has been done in this direction. At present, the participating teachers are not able to get that kind of sympathetic support and sustenance from their Heads, that can encourage them to make intelligent and creative use of their training in the day to day work. National institutes like NIEPA can take the right kind of initiative in this regard and promote the cause of teacher training.

e) Unfortunately, so far, no substantial effort has been made to produce the necessary reading and workshop material for these courses. Senior faculty members, eminent educationists and audio video material producers like AVRCs and EMRCs should lend a helping hand in this effort. No training can last long, unless it has got the necessary support in the form of books, problem solving exercises and demonstration lessons, etc.

The ninth plan programmes and priorities must be getting a final shape at this time. It is hoped, therefore, that due consideration shall be given to some of these areas of importance. If higher education can be given a face lift in this country, then the route must lie, for sure, through the Academic Staff Colleges.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
Nov. 12-14, 1997	World Conference on Education India : The Next Millennium	To discuss developments in education and their impact.	Instt. of Edn, Rural Studies & Dev., All India Assoc. for Ednl. Tech. and Ednl. Tech. & Mgt. Academy.	Dr. Madhu Parhar, C/O AIAET, F-3/E DDA, Munirka, New Delhi - 110067.
Dec. 1997	XXI IASLIC Conference	Theme : Information Superhighway : Its impact on Library & Information Services in India	Tamilnadu Library Association, Coimbatore	Shri Subarata Datta , Indian Association of Special Libraries & Information Centres, P 291 CIT. Scheme No. 6M, Kankurgachi, Calcutta-700054

CONCEPT LEARNING BY CONCEPT MAPS

Anand G. Fadnis*

Introduction

In recent times, ideas about the nature of concept learning in science have radically changed owing to the contributions of epistemologists and science historians. Earlier the nature of scientific concept learning was conceived as a 'realistic' description of the 'facts' by uncovering the scientific principles (laws and theories) 'hidden' in the nature and the natural phenomena. However, according to the contemporary educational philosophical view, scientific principles *do not* originate from the 'facts' but they are discovered to provide significance to the 'facts'. Therefore, the scientific concept learning is *not* the inductive inferences, but is hypothetical knowledge 'fabricated' in the classroom and/or laboratories to understand the 'facts' of the various phenomena and to put some order in them[1].

These radical philosophical changes in understanding of the nature of scientific concept learning have been accompanied by the drastic changes in the conception of learning process in terms of educational psychological views.[2] Students are actively engaged in constructing knowledge during learning in the classroom and/or laboratory[3]. The existing 'conceptual' framework of an individual plays a key role in the acquisition, retention and application of new conceptual knowledge received in the form of instructions from the teachers and/or the textbooks. Therefore, the teachers are required to take the initial individual conceptual framework into account if they really desire to help students acquire meaningful understanding of the scientific concepts[4].

The effective learning of scientific concepts can be accomplished by establishing and understanding of conceptual linkages (connections) between the new concepts introduced during the classroom and those acquired by the past background and experience. This process of elaboration and reconstruction of already existent conceptual frameworks for meaningful learning can be carried out by adopting the various 'tools' from the cognitive science including 'concept maps'.[5]

Construction of Concept Map

The concept map (CM) is tool, based upon the cognitive psychological theory of constructing meaning as a convenient and concise representation of conceptual framework of the learner about any type of knowledge.[5] A knowledge structure of an individual can be visualised and analysed by the construction of the concept map of a theme.

The first step in the construction of a concept map is the identification of the *Central Concept* in the form of a word or a short statement which is called 'proposition'. The related principle and subsidiary concepts are then arranged in hierarchies and linked in the form of short statements to form an 'interlocking' network of the 'stored' and 'fresh' knowledge of the students.

A concept map should reveal:

- The initial concepts of the students;
- The acceptable and unacceptable linkages (connections) between initial and newly introduced concepts; and
- Monitoring of learning process in the form of conceptual changes as a consequence of teaching and other learning activities in the theory classes and/or laboratory sessions.

Concept map can be used by both the teachers and the students to monitor effective scientific concept learning. This can be done either using already constructed concept map or by creating concept map based on the teaching-learning in the classroom and/or laboratory.

In the following paragraphs some illustrative examples of concept maps are given[6-8] and it has been shown that how these can be used for effective learning of science (chemistry) concepts.

Inter-disciplinary 'Teaching-Guide' Concept Map

Burning Fuel has been recognised as the main theme (concept/proposition) in the UNESCO sponsored workshop cum symposium on "Energy and the environment as related to chemistry teaching". The following major concepts in the 'burning fuel' teaching unit have been identified.

- *Oxidation* for the production of energy, products and waste.
- *Diffusion* of mass and energy.
- *Transformations* in mass and energy (both qualitative and quantitative aspects).
- *Efficiency* in terms of cost factor, energy contents, convenience and environmental impact

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of different 'fuels'

- *Social impact* of specific 'fuel' on local, regional and global environments in terms of health problems, acid rains and global warming.

These identified 'themes' and their connections are very general in nature and these have been used in the construction of a concept map (Fig 1). The concept map contains resources materials for the 'curriculum development' of different disciplines/subjects including chemistry. The crosslink network and connections provide an 'inter-disciplinary' approach for all the disciplines/subjects.

These general theoretical concepts can be consolidated further by designing various suitable laboratory/fieldwork activities. These types of concept maps can serve the purpose as an excellent 'teacher's guide' which can be used for the modifications of 'individual conceptual frameworks' of the students to achieve meaningful learning of scientific concepts.[6]

Creation of Concept Map as Classroom and/or Laboratory Exercise

Students can be asked to create concept map from the identified main theme and related concepts. The acceptable and unacceptable connections by the students can be used to recognise following major difficulties faced by an average students in the meaningful learning of scientific concepts :

- Inadequate understanding of abstract/mathematical concepts.
- Inability to relate theoretical concepts with their experimental observations and results.
- Difficulty in ordering/sequencing the various concepts learnt in a curriculum.
- Lack of understanding to recognise weak links or even gaps in their knowledge which slow down learning and many a time even mislead them to confusion and uncertainty.

The concept maps were created before and after instructions in the classroom and laboratory by adopting the following general procedure.[7]

- Assignment of fixed number of concept labels.
- Recognition of acceptable linkages based on the individual conceptual framework of the topic.
- Assessment of wrong/unacceptable linkages in the network during the formal and informal discussions.
- The modification of initially created concept maps by eliminating unacceptable links and establishing new acceptable links.
- The reassessment and modification of concept maps repeated till the final form of concept maps was obtained.

The evaluation of performance of the students in creating their own concept maps can be done by judging the unacceptable and acceptable linkages between the concepts. Weightage can also be given to proper hierarchical arrangements of the concepts.

Concept maps can also be created as a part of post laboratory activity.[8] The connections between theoretical concepts and experimental observations can be considered as criteria for the meaningful learning of the scientific concepts in the complex laboratory environment. New experiments can be designed to explore somewhat unknown linkages in the concept maps. The concept maps created by the students on the general theme 'structure of atom' as their classroom and/or laboratory activities are given in Figure 2.

An attempt has been made by the undergraduate students of this institution (Holkar Science College, Indore) to create the concept map on 'reaction rates' as post-laboratory exercise. The concept map was used as a resource material to introduce many concepts related to the main theme and also to develop new experiments.

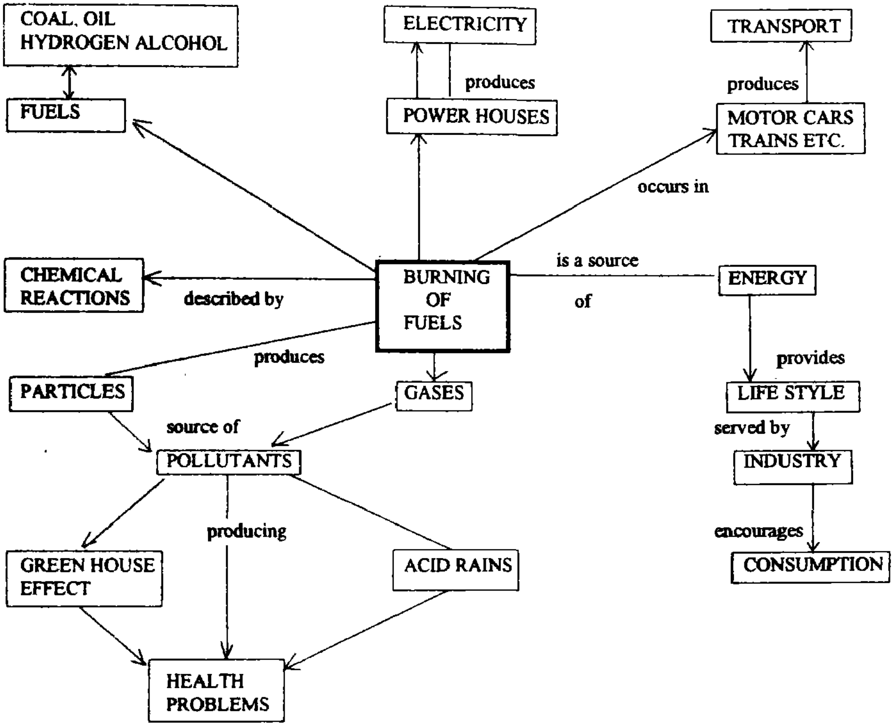
Concluding Remarks

Classroom and laboratory instructions can become more effective when instructional techniques from cognitive science like V-diagramming[10] and concept mapping[5] are incorporated in teaching to improve and monitor the meaningful learning of a scientific concept by the students. These techniques are extremely effective as the starting point for discussion of any new scientific concept in the classroom. These can be used as 'science education' research tools to investigate various real and artificial barriers in the overall understanding of a scientific concept by the students when they are supposed to integrate knowledge received from different sources.

References

1. A.F. Chalmers, *Science and its Fabrication*. Buckingham, Open University, 1990.
2. D. Hodson, *Science Education*, 72, 19, 1988.
3. A.G. Fadnis, *University News*, 33 (23), 6, 1995.
4. D.P. Ausubel, *Educational Psychology; A cognitive View*. New York Holt, Rinehart and Winston 1968.
5. J.D. Novak and D.B. Gowin. *Learning How to Learn*. Cambridge 1984.
6. H. Heikkinen and L. Summerlin, *Chem Edu*. 7(1), 36, 1990.
7. A. Regis, P.G. Albertazzi and E. Roletto, *J. Chem. Edu* 73(11), 1084, 1996.
8. M. Stensvold and J. T. Wilson, *J. Chem. Edu.*, 69(3), 230, 1992.
9. M.B. Nakhleh *J. Chem. Edu* 71(3), 201, 1994.
10. A.G. Fadnis, *University News*, 23 Sept., 1996

Fig. 1 Concept Map for the Topic 'Burning of Fuel'



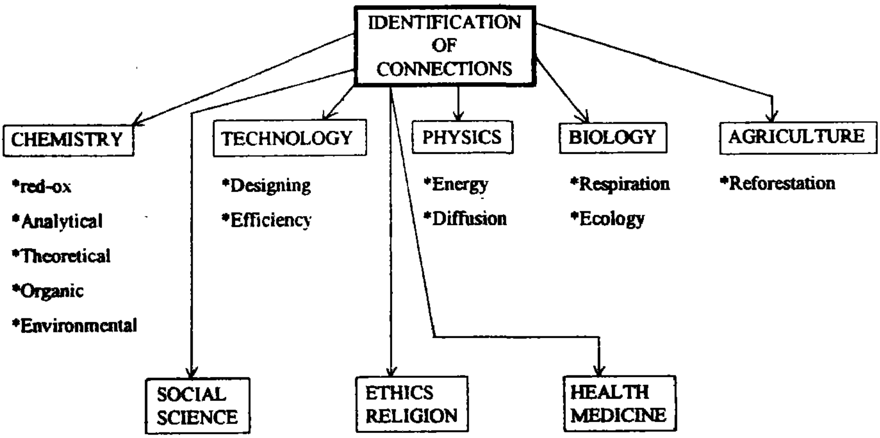
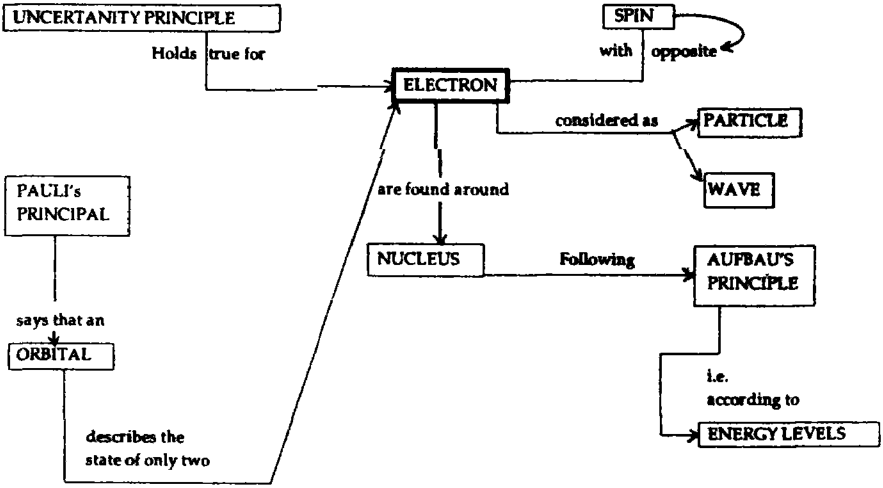
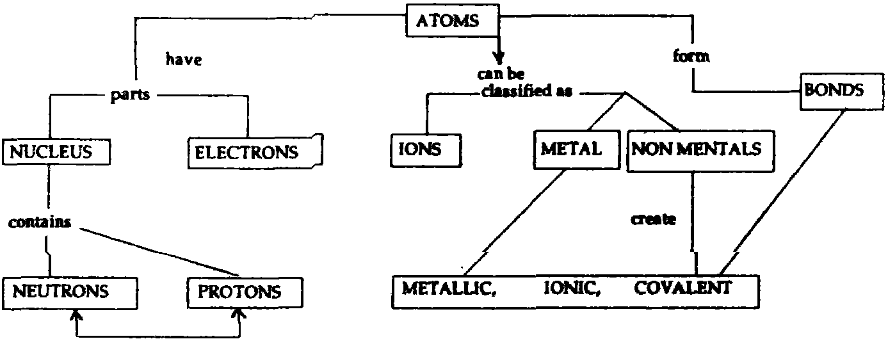


Fig. 2. Concept Maps created by the students on the topic 'Structure of Atom'

(a) *Classroom activity*



(b) *Laboratory Activity*



LABORATORY WORK

- Qualitative analysis of ions, element and other species.
- Quantitative analysis of selected species.

Extension in the Curriculum of Cooperation

The Experience of GRI

B. Tamilmani *

S. Manivel **

Introduction

Gandhigram Rural Institute (GRI), established by a band of social service minded people under the leadership of veteran Gandhian Dr. G. Ramachandran and eminent social worker Dr. Soundram, came into existence during the year 1956, grew into a premier institution for rural higher education. One of the fourteen rural institutes for rural higher education, GRI is probably the only institute which has attained the status of Deemed University. It has caused upliftment of rural areas by practising community life and upholding the Gandhian values through the three facets of education — Teaching, Research and Extension. The courses have been designed predominantly with rural orientation, the Institute has considered the villages around as its extended classrooms and social laboratories. The Institute has gainfully employed rural extension work in teaching and research from its inception.

Extension in Universities

The university system has a great responsibility in acquisition, dissemination and practice of knowledge for the society. The universities should actively take part in extension activities to utilise recent trends in the fields for the development of the community. Such involvement will also help in bringing greater relevance to the courses at all levels. Realising this, extension has been incorporated as an important dimension in the university education system. Traditionally, the universities have been performing two primary functions, namely, Teaching and Research. Teaching means transmission of knowledge while research relates to creation of new knowledge. The UGC policy framework of 1977 states that "there is a third dimension called 'Extension', which means application of knowledge to real life situations". It underlines the need for incorporation of extension activity as an important dimension of higher education along with teaching and research. It further states that extension should gradually permeate into each discipline through changes in curriculum, teaching methods, and evaluation strategies.

The inclusion of extension component as one of the objectives of education provides comprehensiveness and completeness to the value based education. The former UGC Chairperson Madhuri R. Shah assessed the holistic approach of GRI as "It is an educational strategy — a package containing the art of learning for knowledge, providing work opportunities for acquiring skills, community life for social responsibility along with action based research and extension for rural development patterned after Gandhian model of rural reconstruction." As a token of appreciation for its Herculean efforts and committed contribution in the field of extension, the Institute was elevated to the status of Rural University from 1976.

The scope for extension is wider in the case of agricultural universities, scientific research centres and specialised higher education institutions like rural institutes. What follows is an account of Gandhigram Rural Institute's experience in the sphere of extension activities.

Extension in Rural Oriented Education

The basic ideology behind the establishment of rural institute is to bring higher education to rural areas; to meet the educational needs of village youth in a rural locality, to provide programmes excellent in quality but oriented to rural conditions and needs; to train village youth and motivate them for service in rural areas; to conduct research on the problems relevant to rural needs and to serve as an extension centre for the villagers. This can be summarised under three headings : education for rural service; research on the problems of rural areas; and extension work in these areas.

The curricula of various courses offered by the

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Institute have been designed with a bearing on rural realities and focus on rural upliftment. Extension being one of its objectives, and a strategy it adopts to impart knowledge and skill to students, it has never failed to have extension as a part of its courses/programmes. Recently, GRI has switched over from conventional pattern to UGC advocated Choice Based Credit System (CBCS) of education. Under this new system, GRI has devised its programmes in such a way that extension forms part of the programmes. The system has given an impetus to extension activities by making it a compulsory component for the students of all the postgraduate programmes in every semester.

Extension in Cooperation

As a growing academic discipline, Cooperation has been gaining momentum. The subject is offered at the graduate as well as postgraduate programmes by a very few universities and colleges in India. GRI is one of the pioneer institutes which has been offering graduate as well as postgraduate programmes in Cooperation, since 1976. GRI offers Bachelor of Cooperation and Master of Arts in Cooperative Management at undergraduate and postgraduate levels respectively as major programmes. It also offers research programme leading to Ph.D.

The subject of Cooperation has got ample scope and varied opportunities for relating the theory to practice. Extension in Cooperation means extending or enlarging all forms of cooperative endeavour in a meaningful way in real life situations. The need for extension in Cooperation is highly solicited as it provides scope for organisation, development and perpetuation of cooperative form of organisations. In all these, the fundamental premise of extension is centered around taking the ideologies of Cooperation to the rural masses.

In the past, the Department of Cooperation took part in extension programmes undertaken by the University. The activities and programmes related to awareness creation, feasibility studies, organisation of cooperatives, recovery campaigns, etc. However, a major part of the extension programme involved *Shramdan* (manual work) on the part of students and teachers in the initial years. The programmes were exclusively designed and implemented by the Department. In course of time, the Department started giving emphasis to cooperative extension and involved itself actively in the conduct of feasibility studies, organisation of cooperatives, recovery campaigns for the benefit of primary societies, development of leadership qualities among the members of cooperatives and so on. The approach was simple and rural people were considered as the target group and beneficiaries of the programme. These extension activities were considered as extracurricular and as part of a course on extension education. But of late, the Department has changed its approach drastically, even though the area of extension remained to a larger extent unchanged. Least importance is given to *Shramdan* while utmost importance is given to extension of cooperative activities. The extension activities are theme specific and focused in their coverage. If a programme is undertaken to canvas repayment of cooperative loans, then the entire programme is focused on recovery campaign alone. The extension activity is not a one time activity in an academic year. The extension work spreads over whole year constantly and continually. The approach is participatory in nature. Participatory methods are used in the extension work. Institutions like commercial banks, cooperative banks and *Mahila Mandals* are also involved in the extension activities undertaken by the Department. The Department of Cooperation has started collaborating with appropriate agencies in the field. Such an organisational linkage in the sphere of extension has been considered essential for better results.

The system of extension is subjected to assessment and students are given credit for their involvement. As a result, the extension activities really served as a important source of knowledge and field of learning. The students benefit more in the continual system of extension as it facilitates self-assessment, sharing of experiences in the classroom. As they are guided by the teaching and institutional staff the present approach is more rewarding.

Conclusion

The methods and techniques used by the Institute over the years have been changed and improvised to suit the requirements and situations in the field. But still, it has got vast scope. Extension could be more effective and an invaluable instrument of learning for students if they are involved in every stage of extension activity from planning through evaluation. Considering this fact, the Institute has started evolving strategies for its implementation in the right direction.

Educational Research in North-East

S.K. Gupta*

Educational Research : Meaning & Scope

Educational Research has broadly been defined as any systematic study designed to promote the development of Education as *science*. It includes any activity that leads to a better understanding of educational problems and findings relevant to policy formulation and planning. Its domain, according to Fred N. Kerlinger, is human behaviour related to educational processes and outcomes. It is, therefore, social, scientific and behavioural research including all phenomena related to human behaviour in educational process.

The growing problems related to education at all its stages demand more of research. The problems of universalisation of elementary education, vocationalisation of education, delinking degrees from jobs, autonomy of educational institutions, accountability of teachers, question mark on the certified degrees given by institutions, and open-university system, etc pose a big challenge to educational research.

How far has educational research come forward to answer the questions related to education in North-East, is yet to be assessed. Very little has been done in this direction. Educational research is in infancy in North-East. It is growing at a very slow rate for following reasons.

1. *Lack of Research Facilities*

It is a well known fact that the institutions which are concerned with educational research are Depts. of Education in universities, SCERTs and recently DIETs. All such institutions in North-East lack research-oriented trained manpower except of course depts. of education in some of the universities. But all these institutions lack properly equipped laboratories, tools and equipment needed for research.

The standardised tests, the basis of educational research, are not sufficiently developed in North-East. In Nagaland, for example, standardized tests on Naga students population are not yet available. Some work is, however, in progress at the doctoral level.

2. *Lack of Awareness and Interest in Research*

This is another factor for the slow progress of research in education in North-East. By and large, students, teachers and other personnel in the field of educational research have an indifferent attitude towards research. This may be because of lack of awareness of the importance of research, apprehension whether they are competent to do research, or that it is time consuming and a costly affair.

The Depts. of Education, however, have been successful in enrolling some scholars for research as a result of constant motivation and encouragement to students.

3. *Lack of Interaction between Policy Makers and Researchers*

There is a widespread agreement that educational research has not been useful to policy makers either because the research was unrelated to existing problems or because the results of the research did not reach them. Researchers would like to see that their research is used to improve educational practices, but policy makers complain that they can make no use of most of the research that is being done as either it is not related to actual problems or the results are poorly reported. Educational research in North-East is so recent that it has had little time to affect educational policy. Moreover educational research is concentrated in universities which are often out of touch with state government policies and programmes because of their non-involvement or apathy to such an involvement in the name of autonomy.

4. *Lack of Interaction between Schools, Colleges and Universities*

Educational research is by and large concentrated in universities and there is no link between them and the schools and colleges. University teachers hardly get an opportunity to visit schools and colleges to appraise the existing working conditions and related problems.

Secondly there is no provision for discussion of the results of research with the school and college teachers for proper implementation. Even there is no or very little scope of transmission of research

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work to these institutions. There is a general lack of research publications which could be sent to all concerned institutions. The educational research is confined to depts. of Education only.

5. *Lack of Interaction between Education and Other Academic Disciplines*

Education is an interdisciplinary and multidisciplinary subject. For better and fruitful research in education, it is necessary that there is a lively interaction and coordination between the depts. of Education and other Social Sciences depts, Psychology dept., Humanities and even Science depts. For example, problems related to teaching of science and mathematics or that of languages can be better dealt with the cooperation of these depts. The absence of such an interaction adversely affects educational research.

6. *Lack of Organisation of State-level/Regional level Seminars/Conferences*

The other factor affecting the development of educational research in North-East is the lack of provision to discuss the problems related to education at its various levels on a common platform. Little effort has been made to organise regional/state level seminars where the university, college and school teachers along with research associates of other institutions discuss issues and problems related to education. Real problems in research are generally thrown up as a result of discussion in these seminars and conferences.

Conclusion

Educational research in North-East is at its infancy. There is a need for concerted efforts to conduct more and more research in the field of educational testing — development of psychological and educational tests which are not yet available as tools of further research. Research is also needed in the field of curriculum development. The curricula at the school, college and university levels are outdated and modifications are required to meet the needs and aspirations of the society.

Whatever research has been done in education in North-East is of the nature of a spade work as most of it is descriptive of development of education at its various stages.

As there is a vast scope of educational research in North-East and very little has been done so far, it is suggested that Educational Research/Study Centres are set up in universities in the depts. of Education. These centres may look to the development of educational research exclusively as in other countries. There is an urgent need to have well-equipped laboratories and sufficient research materials like hardware and software available in print or finished form along with computer services in each university and other research oriented institutions.

Active and lively linkage between the university and other educational and research institutions is another necessity for the growth of research in North-East.

There is also a need to create sufficient funds for the publication of researches done at the universities or other institutions and their wider circulation.

Further, a coordinating agency should be set up to monitor research activities in the North-East and periodically evaluate their quantitative and qualitative aspects. It may also establish links with the rest of the country and even other countries for promotion of educational research in North-East.

The North-East Council should also establish a Research Cell to promote growth of educational research in this region.

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Meeting the Challenge of the West

Prof. Raja J. Chelliah, Chairman, National Institute of Public Finance and Policy, New Delhi, delivered the convocation address at the 47th Annual Convocation of the Karnatak University, Dharwad. He said, "If we as a nation wish to meet the challenge of the West, our thinking must become more rational and the scientific temperament must be spread among the masses. At the same time, the upper classes must go back to the principles of virtue and good conduct taught to us by the seers and sages from ancient times, throughout several millennia. India's advancement in the world is hindered as much by the chicanery of the upper or dominant groups as by the ignorance and illiteracy of the masses." Excerpts

Ours is a large country. With fast economic growth, our economy is emerging as one of the largest economies of the world. It could become soon the third largest in the world. The total output we produce, which is called GDP, is now around Rs.12 lakh crore, i.e. Rs. 12,000 billion. At 6 per cent rate of growth, the annual output would amount to Rs. 720 billion — large enough to raise our living standards.

There is advantage in being a large economy because what economists call economies of scale in production can be reaped within that economy. Greater specialisation is possible and the cost of production can be brought down. This makes it possible to produce a greater variety of goods within the country. Of course, a small country also can do economically well — take the example of Singapore — by promoting efficiency in a few lines of production and exporting its products to the world. But, it would have to be more dependent on the world economy.

The promotion of economic growth, and particularly the upliftment of the masses of our people, will be greatly helped by India emerging as a strong and large unified economy. That is to say, we must create and maintain a common market. In a common market, capital, labour and goods will be allowed to move freely across State boundaries without any tax or non-tax barriers. This would enable trade within the market to be maximised. And with the lower costs associated with regional specialisation, Indian producers would be able to compete more effectively in the world market.

There is no doubt that the maintenance of common market is beneficial to the nation. But its creation requires the co-operation of the regions. The regions must be willing to give due weight to the national interests and must realise that what is in the national interest will in course of time benefit all the regions.

While the creation of common market presupposes a national outlook on the part of the citizens of different regions, the common market itself will promote national unity because it will increase the interdependence of the different parts and the movement of labour of different skills among the regions. Greater intermingling of the educated people hailing from various regions would lead to greater understanding and foster national outlook and feelings of kinship. As members of the vanguard, you must make your contribution to the strengthening of the national spirit and unity.

The need of the creation of common market in India that I have touched upon illustrates clearly two of the basic requirements for creating a prosperous society, namely, enlightened self-interest and national behaviour based on knowledge. To this must be added compassion which includes the more fortunate to share some of their goods and prosperity with the less fortunate and the down trodden. This is not to say that we should reconcile ourselves to the existence of a sizeable poor population, living on charity. No, mass poverty should be eliminated through lower population growth, greater production and larger employment. However, economic growth by itself cannot ensure just or more equal distribution. And there will always be handicapped people incapacitated by illness and those who are congenitally incapable of holding on to jobs. Hence the elite of the society and the leaders of the Government must be compassionate, indeed they should lay much stress on compassionate policies.

Thus, enlightened self-interest, rational behaviour based on scientific knowledge and compassion are the three ingredients needed to create a strong, prosperous and happy society.

I do not wish to preach to you about self-sacrifice. A viable political and economic system cannot be based on the principle of every one completely sacrificing his or her interests. Self-sacrifice on the part of people in general is neither achievable nor sufficient. What is needed is a positive contribution by every one to output, sustained hard work based on the utilisation of knowledge and observance by every one of the rules and laws of the country. Once the majority of individuals fulfil these conditions, the state can make special provisions for the disadvantaged.

As we all know, a modern industrial economy is knowledge based. Science and technology are the bases on which its structure is built. The management of the economy is also to be conducted on careful analyses of causes and effects in the economic and allied fields. The industrial economy, which is the engine of growth, needs a scientific temperament in a large segment of the people.

A literate population capable of analysing events, happenings and interactions in terms of cause and effect is a basic pre-requisite for the successful running of an industrial economy.

The western industrial economies, which dominate the world today, developed as the result of three major changes in culture and institutions. The first was the change intellectually from a controlled to a free society. The authority of the Roman Catholic Church to control thought and expression of views was successfully challenged. The freedom of thought thus obtained was the basis of the evolution of the rationalist approach to the analysis of temporal problems and the development of natural sciences. As we all know, Galileo was a pioneer in bringing about this intellectual revolution. His experiments led him to believe that the earth comes round the sun whereas scriptures lead one to think that the earth is the centre of the universe. Galileo has been proved right. We now know that the earth is only a tiny speck in the vast universe. In course of time the natural sciences were developed and in western societies all temporal events began to be analysed in rational terms, establishing probable relations between causes and effects on the basis of careful study and experiments. This is one strand in western thought and culture which made possible the industrial revolution.

Another major strand in modern western civilisation and thought emanated from a break in the traditional views on state and government and on the relation between the state and the individual. The right of some men to rule others were questioned; as against the older view, the equality of all men and the right to individual freedom were asserted. These ideas led to the American and French revolutions which were responsible for the embodiment of the principles of eqality before law and the rights to individual freedom into the political structures of European and North American countries.

The third major component of modern western civilisation is the private enterprise system untrammelled by too many governmental restrictions. The change over from the mercantilist and pre-industrial state controlled systems to a market oriented economic system was in line with the changes in the intellectual and political spheres. The ideas underlying the private enterprise system are : (a) right of individuals to choose their occupations and experiment with different methods of production, (b) large-scale production, and (c) making use of individual self-interest disciplined by competition to attain efficiency in production. It is not that the private capitalist

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system, even when regulated by the State, is a system without blemishes. It is associated with many problems such as inequalities, recurring phases of unemployment, degradation of environment, etc. However, combined with representative political democracy, it has enabled the western countries to increase their national products many fold and thereby abolish mass poverty. Increasing wealth and freedom of enquiry have led to great scientific discoveries. Today, they dominate the world in science, economic output and military strength.

A rational approach to the analysis of temporal problems as well as to the conduct of personal lives and universal education are the foundations on which a strong and prosperous economy can be built. The successful functioning of such an economy requires also adherence to ethical rules — integrity, truthfulness and acceptance of social obligations.

Now in India, we have readily accepted the political ideas thrown up by the American and French Revolutions and the British tradition of parliamentary democracy. We are now moving towards a private enterprise economy. However, we have not as a people fully accepted the rational approach to temporal problems. Old beliefs in the intervention of super-natural forces in our personal lives and several superstitions persist including what has now become a superstition the caste system. The emancipation of the masses and their economic and social advancement is much hindered by the prevalence of unscientific beliefs and superstitions.

If we as a nation wish to meet the challenge of the West, our thinking must become more rational and the scientific temperament must be spread among the masses. At the same time, the upper classes must go back to the principles of virtue and good conduct taught to us by the seers and sages from ancient times, throughout several millennia. India's advancement in the world is hindered as much by the chicanery of the upper or dominant groups as by ignorance and illiteracy of the masses.

Yet, I surely believe that the indomitable spirit of India will assert itself. The initiative and enterprise of individual citizens are already being unshackled. Concerned citizens have started and are successfully carrying out crusade against many cases of corruption and injustice. There is pressure on the governments to spend more on the social sectors. There can be optimism that we shall overcome all hurdles and successfully move towards the vision that Nehruji had of abolition of poverty and inequality of opportunity in our land.

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CAMPUS NEWS

World Congress on Natural Medicines

A recent international report on 'Herbal Medicine Sources' has identified 18 species of medicinal plants as being in urgent need for conservation, particularly in India and China, which are two important countries with a huge market for medicinal plants. This was revealed by Dr. G V Satyavathi, Director-General, Indian Council of Medical Research, who said that the sale of medicinal plants was reported to have gone up by 25 per cent. She was speaking at the 35th World Congress on Natural Medicines in S V University in Tirupati recently. She said that the therapeutic claims of Indigenous System of Medicine, particularly, those using plant drugs needed scientific validation.

Dr. Satyavathi said that ICMR had taken up Composite Drug Research Scheme. A selected batch of ten ayurvedic plants were evaluated by ayurvedic experts, allopathic experts and pharmacologists.

Dr. Satyavathi said six diseases — anal fistula, bronchial asthma, urolithiasis, diabetes mellitus, viral hepatitis, and filariasis could be cured by Indian medicine.

A centre of advanced research was established by the ICMR for purposes of formulation of drug doses, standardisation and quality control of all plant drugs inducted into clinical trials at the Department of Pharmaceutical Sciences, Panjab University, Chandigarh (which has now been shifted to the regional research laboratory of CSIR located at Jammu).

This advanced research centre has prepared protocols for the correct identification, botanical authentication, right from the stage of collection of the plant material, its drying, powdering, extraction, in-process quality control, preparation of formulations, standardisation of the finished product, stability studies.

Besides, the packing and labelling for the preparation of number of standardised drugs for use in clinical trails by ICMR is also done at the centre.

Jamia Hamdard Plans New Courses

Two new "professional" courses are proposed to be introduced in Jamia Hamdard University from the next academic year. The courses of Master of Business Administration and Master of Computer Application are the part of the professional thrust that university is planning to embark.

The Vice Chancellor of the university, Professor Alauddin Ahmed, said these self-financing courses would provide the university more diversity. An amount of Rs. 80,000 would be charged for each course. A course in physiotherapy was also being conceived, the V C said. The pharmacy course, started last year, has a large number of students.

Prof. Ahmed said, Hamdard University was the only university in north India which provided corridors for education in professional and religious courses.

The science of Yunani medicine attracted many questions. The Dean, Faculty of Medicine, Professor Jamil Ahmed claimed that the science could treat patients of Hepatitis-B and AIDS. He said that the patients of both diseases were treated in the hospital of the institute and the results were encouraging. Three AIDS patients came to their centre from a government hospital where their life term was declared limited but with the continuous use of Yunani medicine their life span increased.

Dibrugarh Varsity Convocation

Dr. Ramaranjan Mukherjee, Chancellor of Rashtriya Sanskrit Vidyapeeth, Tirupati called upon the universities to work for total national integration, while retaining the identities of different cultures. He was delivering the seventh convocation address of the Dibrugarh University in Dibrugarh recently. He said that if education was to establish itself as an instrument for social upliftment, the universities must create a 'university culture' far above the levels of fragmanted regional culture which needed fuller development under the broader umbrella of the Indian culture. He said that if a university was not able to bring under one umbrella divergent thought currents, it was incapable of being described as a university in the true sense of the term. The university, Professor Mukherjee said was required to actualise the philosophy of universal fraternity and global harmony.

He pleaded for evolving a new course structure. He said that while the specialists were to penetrate deep into new found knowledge, the generalists needed to be imparted instructions in regard to their relation with past, the nature and environment, and with what type of relation they should establish with the society. *The man becomes aware of the* identity of his own self and with the help of the universe it becomes easy for him to implement the philosophy of a universal harmony, global fraternity, world peace and mutual tolerance.

The Governor of Assam, Sri Lok Nath Misra who is also the Chancellor of the University, said that there should be a proportionate blending of material and spiritual aspects of life in the system of education. He was glad to find that Dibrugarh University was rightly endeavouring to realise that ideal, he added.

Dr. M.M. Sharma, Vice Chancellor of the university, in his report, listed various achievements of the University during the last five years.

IASLIC Meet on Information Superhighway

The XXI All India Conference of the Indian Association of Special Libraries & Information Centres (IASLIC) will be hosted by the Tamilnadu Library Association at Coimbatore during December 1997. The theme of the conference is Information superhighway : Its impact on Library & Information Services in India.

The topics proposed to be discussed at the conference include : (1) Information Superhighway (ISH) — Genesis and development of ISH concept, Global and National level infrastructure, Impact of ISH on different sections of the Society, National policy/ planning; (2) Internet — Use of its services and resources, Databases, OPACs, Electronic publishing, Newsgroups, List Servers, E-mail, WWW, Training for its use, Restriction, Safety and Security of Information, Intellectual Property Rights, Service providers, Impact on library and information Management and Services, Re-engineering Library Networks in India, Virtual Library.

On this occasion special interest group (SIG) meeting would also be organised. These include : SIG Computer Application — Indian Databases and Access Problems; SIG Social Science Information — Librarians and Information Scientists approach towards contents analysis of Social Science Documents; SIG Humanities Information — Problems relating to information of literature and language of the minority communities in India; SIG Industrial Information — Sources of Industrial Information on Internet; SIG Library Education — Status and positions of LIS Education through distance mode of learning; and SIG Informetrics — *Bibliometric analysis of Indian* Scientific activities.

Further details may be had from Shri Subrata Datta, Coordinator, Indian Association of Special Libraries & Information Centres. P291 CIT Scheme No. 6M. Kankurgachi, Calcutta - 700054.

Punjab Science Congress

The recently formed Punjab Academy of Sciences with its headquarters at Punjabi University, Patiala decided to organise the 'first Punjab Science Congress' at Patiala from April 28 to 30. According to Prof B.S. Gill, Professor, Department of Botany, Punjabi University and Secretary of the Academy, the conference will be held jointly by the Patiala chapter of the Indian Science Congress Association (ISCA) and Punjabi University on the theme "scientific and technological challenges of Punjab during the next century."

Prof. I. J.S. Bansal, President of the Academy and the convener of the Patiala chapter of the ISCA said the deliberations of the congress would cover the basic, applied and popular aspects of science. It was likely to formulate strategies and plans for the future needs in the academic and technological pursuits so that Punjab could have a sound base of scientific and technological manpower for the 21st century.

Dr. Bansal added that the membership had been opened to all persons with scientific and technological background and interested in the development of Punjab.

DST to Focus on Small Universities

The Department of Science and Technology, Government of India, proposes to give a special consideration for promoting research in relatively smaller and less endowed universities. This was revealed by the joint advisor of the Department of Science and Technology, Dr. V Rao Aiyagari, in Tirupati recently. He said that Rs 7 crore per annum would be invested on these universities. He said that they were giving grants to the universities to the tune of Rs. 35 crore for promoting research in advanced areas of sciences and engineering.

Dr. Rao said that the DOST was now identifying the good scientists and supporting their research career. He said they were trying to give more assistance to the government manned engineering colleges to build up infrastructure facilities. DOST had been identifying specific areas of research in frontier areas of sciences. These thrust areas included : molecular biology and NMR imaging in life sciences, lasers condensed matter in Physics, synthetic organic and protein sequencing in Chemistry and manufacturing sciences in engineering.

New programmes in the mathematical applications were also proposed to be initiated, he added.

Dr. V.K. Sukumaran Nair Remembered

"Judges and Judiciary need not be agents of change nor of resistance to change in the public sphere, but they are duty bound to ensure that the battle for political, social and economic empowerment does not become unequal and that the rules of the game are not seen to be rigged in favour of the new aristocracy of money and political power" observed Dr. K. Raman Pillai, former Professor and Head of the Dept. of Political Science and Hon. Director of the V.K. Krishna Menon Study Centre of the University of Kerala. He was delivering the first Dr. V.K. Sukumaran Nair Memorial Lecture on "Judicial Activism and Indian Democracy" in Trivandrum recently. Dr. V.K. Sukumaran Nair was the former Vice Chancellor (1977-1981) of the University of Kerala.

The judicial process, he said, had to tread cautiously while adjudicating issues affecting the constitutionally assigned division of state power, since power in a democracy is essentially political in nature. Judicial activism was part of the power of judicial review for which the Indian Constitution had endowed special authority on the High Courts and the Supreme Court, the limits of this authority were not spelt out either in the Constitution or in the judicial process, said Prof. Pillai. Judicial interferences should be resorted to only in extreme cases where the liberty of the citizen was in jeopardy. A judicious application of judicial activism would definitely strengthen the fabric of democracy in India, Prof. Pillai concluded.

Prof. T.P. Sankaran Kutty Nair, Director, Vallathol Institute of Kerala Studies of the Sree Sankaracharya University of Sanskrit and Hon. Secretary of the Centre for Interdisciplinary Studies, which organized the Lecture, paid glowing tributes to Dr. V.K. Sukumaran Nair.

Jamia Hamdard Convocation

The Prime Minister Mr. H.D. Deve Gowda, reiterated government's commitment to safeguarding the constitutionally guaranteed rights of religious and linguistic minorities. He was delivering the convocation address at Jamia Hamdard University in New Delhi recently. He urged the university community to ensure that the policies and programmes of their institution were directed towards enriching the quality of life of the minorities. The curricula should be such that it enabled all, especially the minorities, to participate fully in the process of nation building, he said.

The Government, Mr. Gowda said, was committed to extending assistance to higher education in areas where private enterprise, as in the case of Jamia Hamdard, was participating in academic affairs without a profit motive or commercialisation. He described Jamia Hamdard as an apt example of private enterprise making its profits available for educational purposes. The Prime Minister was particularly appreciative of Jamia Hamdard's efforts in preserving and nurturing an alternate system of medicine—Unani. An institution like Jamia Hamdard, which facilitates inter-disciplinary study, was in a particularly advantageous position to modernise and promote indigenous systems of medicine along scientific lines.

Mr. Gowda said it was important that Jamia Hamdard took an active and sustained interest in devising and implementing programmes for the continuing education of practitioners of indigenous systems of medicine. This could be imparted either through short-term 'on campus' courses, or through distance education. While on the subject of distance education, he lamented about the fact that medical institutions had not exploited the 'distance mode' of education.

The Prime Minister conferred graduate, postgraduate and doctoral degrees on 349 students and presented gold medals to over a dozen outstanding students.

Prof. Allaudin Ahmad, Vice - Chancellor, in his report, made out a strong case for more government funding. He backed up his

demand for the enhancement of maintenance grants to the tune of at least 75 per cent of the maintenance budget by saying that the university with job oriented programmes would help the government produce skilled manpower and promote the cause of the minorities.

Sanskrit & Cultural Redefinition

A seminar on "Tradition and modernity: Role of Sanskrit in the process of cultural redefinition" was recently organised jointly by Sarswatam, a Sanskrit organisation, and the Shri Baba Saheb Apte Smarak Samiti, at the Panjab University, Chandigarh recently. Speaking on the occasion, Dr Ramakant Sharma Aangiras, Kalidas Professor of Sanskrit, Panjab University, remarked that language was the key to culture. And Sanskrit, being the oldest amongst languages and recorder of human evolution from time immemorial, happened to be the key in the Indian context. Sanskrit alone could remove the cultural maladies afflicting India today.

Many scholars from Himachal Pradesh, Punjab and Haryana attended the seminar at which many as 12 papers were presented and discussed.

TISL-IIT Computer Centres

Tata Information Systems Ltd (TISL), the IBM Tata venture, is reported to have tied up with the Indian Institute of Technology (IIT), Kanpur, to set up computer education schools in major cities in the country. About 15 such schools will commence operations from May, offering two courses, the curricula for both being designed by IIT.

Zakir Hussain Chair at Mysore Varsity

The Mysore University has established a chair for study of thought and ideas of Dr. Zakir Hussain. Prof. B. Sheik Ali, eminent historian and former Vice-Chancellor, Goa University, will be the chairs's first visiting professor. The chair was inaugurated by Aligarh Muslim University Vice Chancellor Mr. Mehbub-ur-Rahman in Mysore recently.

Marketing Library & Information Services

The Small Enterprise National Documentation Centre (SENDOC) located at NISIET, Hyderabad proposes to organise a short term programme on Marketing of Library and Information Services and Products on June 16-20, 1997.

The objectives of the programme are (i) to cover the marketing aspects of information as an economic resource with its peculiar characteristics and other services; (ii) marketing strategies with reference to information services; (iii) pricing of information services; and (iv) information technology applications in generating information and its marketing.

The programme is intended for librarians and managers of information concerned with skills in generating, designing, developing and marketing of information products and services attached to special libraries, documentation and information centres; academic and research institutions; public & private sectors; central and state government departments, etc.

Further details may be had from Ms. K. Subhashini, Programme Director, NISIET, Yousufguda, Hyderabad-500 045.

Advances in Bioinformatics

The Bioinformatics Centre of Pondicherry University, recently organised a three-day Seminar on the Recent Advances in Bioinformatics and its Applications. Co-sponsored by the Department of Biotechnology, Govt. of India, the seminar was attended by over 50 participants from all over the country.

Dr. P.K. Das, Director, Vector Control Research Centre, Pondicherry in his keynote address, stressed the need of such seminars for biologists. Dr. Srinivasa Rao, Registrar, who presided, stressed the importance of bioinformatics. The topics discussed at the seminar included (i) sequence analysis; (ii) DNA and Protein modelling human genome project; (iii) structure of database; and (iv) analytical tools of bioinformatics.

Prof. A. Gnanam, Vice-Chancellor, Pondicherry University, in his valedictory address, referred to the importance of bioinformatics and need for accessing information through electronic mode.

IIT Mumbai Develops Fluid Extraction Plant

A world class commercial Supercritical Fluid Extraction (SCFE) prototype plant is reported to have been designed and commissioned at the Indian Institute of Technology (IIT), Mumbai. Godrej & Boyce and IIT, Mumbai have worked together as a team to develop the SCFE plant in a

(Contd. on page 28)

OUTLAYS AND EXP

Plan and Non-Plan Budgetary Expenditu

State/U.T.		1993-94 (Accounts)			% Age to Total Budget	
		Plan	Non-Plan	Total		Plan
	1	2	3	4	5	6
1.	Andhra Pradesh	77.61	1350.22	1427.82	17.81	95.39
2.	Arunachal Pradesh	22.78	31.86	54.64	13.68	29.32
3.	Assam	227.62	549.46	777.08	26.78	253.99
4.	Bihar	61.66	1328.64	1390.29	19.00	123.54
5.	Goa	13.51	73.67	87.18	19.22	15.83
6.	Gujarat	34.07	1322.05	1356.11	19.56	40.01
7.	Haryana	59.73	389.01	448.74	13.19	89.74
8.	Himachal Pradesh	62.95	191.09	254.04	17.47	74.56
9.	Jammu & Kashmir	62.66	263.19	325.85	26.73	56.26
10.	Karnataka	195.60	1046.37	1241.97	20.01	284.28
11.	Kerala	33.38	1092.85	1126.23	26.23	47.35
12.	Madhya Pradesh	140.03	1076.17	1216.20	16.18	210.29
13.	Maharashtra	157.42	2464.95	2622.37	18.02	252.15
14.	Manipur	14.31	93.60	107.91	24.66	16.95
15.	Meghalaya	29.63	62.60	92.24	19.10	33.73
16.	Mizoram	14.39	49.83	64.22	15.33	12.39
17.	Nagaland	7.87	74.93	82.80	12.18	10.26
18.	Orissa	89.08	589.00	678.08	19.47	201.61
19.	Punjab	56.78	609.90	666.68	16.49	114.55
20.	Rajasthan	179.14	1032.81	1211.95	20.55	284.93
21.	Sikkim	9.70	22.92	32.62	16.31	13.68
22.	Tamil Nadu	76.71	1633.30	1710.02	19.53	105.79
23.	Tripura	26.25	107.84	134.09	20.85	33.50
24.	Uttar Pradesh	120.20	2198.47	2318.67	17.46	301.42
25.	West Bengal	68.40	1540.83	1609.23	23.30	117.40
26.	A & N Islands	4.04	22.84	26.87	13.27	5.61
27.	Chandigarh	4.86	53.18	58.04	19.47	9.16
28.	D & N Haveli	1.24	3.75	4.98	11.13	1.66
29.	Daman & Diu	0.87	4.59	5.46	14.22	1.52
30.	Delhi	39.71	91.86	131.58	25.91	83.72
31.	Lakshadweep	0.48	6.21	6.69	8.16	1.18
32.	Pondicherry	10.69	35.42	46.12	14.72	14.85
	STATES/UT	1903.36	19413.41	21316.77	19.14	2936.62
	Centre	1217.37	878.96	2096.33	1.94	1568.80
	Grand Total	3120.74	20292.37	23413.10	10.66	4505.42

Source : Annual Financial Statistics of Education Sector 1996-1997. Ministry of Human Resource Development, Department of

HEET

DITURE ON EDUCATION - II

on Education by Education Department

(Rs. in Crores)

1994-95 (RE)		*% Age to Total Budget*	*1995-96 (BE)*			*% Age to Total Budget*
Non-Plan	*Total*		*Plan*	*Non-Plan*	*Total*	
7	*8*	*9*	*10*	*11*	*12*	*13*
1526.32	1621.71	17.40	195.36	1670.00	1865.35	17.13
34.56	63.88	14.63	28.24	37.09	65.33	13.53
501.59	755.57	23.31	356.78	543.86	900.64	24.23
1548.77	1672.31	21.63	173.70	1684.28	1857.98	22.09
80.57	96.39	18.16	21.16	81.65	102.81	15.95
1501.81	1541.81	21.04	33.27	1663.14	1696.41	22.97
421.91	511.65	7.02	101.13	428.78	529.91	10.50
227.50	302.06	18.30	*88.67*	*254.41*	*343.08*	*17.67*
276.73	332.99	27.32	69.89	288.05	357.94	29.36
1203.38	1487.66	19.44	384.71	1336.42	1721.14	18.93
1311.00	1358.35	26.20	79.06	1492.65	1571.71	27.21
1252.40	1462.68	17.63	224.87	1365.65	1590.52	16.44
2707.43	2959.58	17.44	239.31	2651.90	2891.21	15.64
115.58	132.52	25.45	17.28	116.36	133.64	26.26
66.49	100.22	18.13	49.77	68.51	118.28	19.70
53.75	66.14	13.56	10.81	52.75	63.56	14.78
78.12	88.37	12.24	10.56	87.78	98.34	12.81
689.72	891.33	19.45	162.52	717.71	880.23	19.08
654.70	769.25	12.84	126.75	702.11	828.85	11.04
1139.68	1424.60	20.79	344.01	1259.78	1603.79	20.08
25.13	38.82	7.24	16.94	26.00	42.94	7.59
1836.87	*1942.65*	*21.15*	*111.17*	*1994.56*	*2105.73*	*21.25*
112.74	146.25	20.61	43.15	127.08	170.23	18.98
2620.77	2922.20	18.95	324.01	2716.22	3040.23	16.85
1706.44	1823.84	21.61	155.32	2125.20	2280.52	24.24
25.99	31.60	13.28	7.47	26.86	34.33	11.57
57.98	67.14	20.41	10.08	61.49	71.57	20.53
3.98	5.64	11.44	2.41	4.04	6.45	9.99
5.00	6.52	14.80	2.11	5.06	7.17	12.63
334.44	418.15	28.76	140.23	363.02	503.26	26.70
8.65	9.83	9.79	1.40	8.25	9.65	8.39
38.35	53.21	14.78	15.58	38.30	53.88	13.77
22168.32	25104.94	18.82	3547.72	23998.96	27546.88	18.72
920.24	2489.04	2.03	1823.34	880.23	2703.57	1.98
23088.56	27593.98	10.77	5371.06	24879.19	30250.25	10.67

ducation, Planning & Monitoring.

(*Contd. from page 25*)

completely indigenous manner. The prototype, a state-of-the art, ten litre extractor, brings the new SCFE technology to India in a cost effective and viable form. The indigenisation has achieved an over 30 per cent reduction in the price of SCFE plants as compared to imported ones.

Goyal Award for Asis Dutta

Prof. Asis Dutta, Vice-Chancellor, Jawaharlal Nehru University, has been selected for the Goyal Foundation award for the year 1997 for his "significant contribution in the area of molecular biology". The award comprises Rs. 1 lakh in cash, a gold medal and a citation.

Prof. Dutta, a distinguished scientist, is recipient of a number of prestigious awards including the highest science award in India, the Shanti Swarup Bhatnagar award by the Council for Scientific and Industrial Research (CSIR) in the field of biological sciences in 1980. He was also the recipient of the first G.D. Birla award for science and technology.

Prof. Dutta is also credited with being the first Indian Scientist to get the 'gene patent' of USA. So far, he is said to have acquired five patents in his area of research.

News from Agricultural Universities

Sustainable Management of Intensive Agriculture

Eminent agricultural scientist, Dr. M.S. Swaminathan, called for micro-planning, scientific land use, water conservation, integrated pest management, improved post-harvest technology and economic farming alongwith systemised information system to form a national policy for sustainable food production. He was speaking at a symposium on "Sustainable Management of Intensive Agriculture" organised on the occasion of the third National Agricultural Science Congress in Ludhiana recently. Dr. Swaminathan also laid emphasis on anticipatory research on micro-planning and precision farming.

The Vice Chancellor of Punjab Agricultural University, Dr. A.S. Khehra, and the Director (Seeds) Mr. B.D. Dhillon, said it had become imperative to invest on the identification and transfer of desirable genes into agronomical promising genotypes for sustainable agriculture.

Dr. L.R. Abrol, Rice-Wheat Consortium Facilitator, and Dr. R.K. Gupta, Rice-Wheat Cooperator, called for re-engineering research process to address problems in a holistic manner by maintaining environmental integrity with enhancing system productivity.

Dr. S.M. Virmani from ICRISAT, Hyderabad and Mr. G.D. Singh from the Indian Council of Agricultural Research sustainable agriculture embodied the four basic concepts relating to productivity close to that of ecological potential of land, maintenance of ecological diversity of plant species and conservation of natural resources and socio-economic viability within the economic framework of a region or a country.

Dr. J.S. Kanwar and Dr. G.S. Sekhon expressed concern over overmining of soil reserves of nutrients, leading to declining yield and increasing deficiency of plant nutrients.

Dr. S.S. Parihar and Mr. S.D. Khapar of PAU underlined the need for proper water management.

National Agri-Tech Project

The Indian Council of Agricultural Research (ICAR) proposes to launch a national agricultural technology project (NATP) to reinforce the farm research and education system for meeting the increasing food production needs of the country, said Union Agriculture Minister, Mr. Chaturanan Mishra. He was addressing the 68th annual general meeting of the ICAR society in New Delhi recently. He pointed out that the World Bank would extend a $250 million (about Rs 875 crore) support to the NATP aimed at increasing the agricultural productivity and profitability on a sustainable basis.

Mr. Mishra said innovations in technology development, assessment and dissemination with the participation of the farmers would be the core objective of the NATP. The project, he added, would be implemented in close collaboration with the Union Agriculture Ministry and State Governments.

The Agriculture Minister said the ICAR would also take up a social audit of the impact of the farm research technologies on the

Indian farmers, particularly the small and marginal ones, to remove any obstacles in percolation of the new technologies to the grassroots levels.

Dr. R. S. Paroda, ICAR Director-General, said the Council had already prepared sector-wise perspective plans for the year 2020 to ensure advanced planning for meeting the future needs on the farm sector.

The ICAR Director-General presented a detailed report of the major research achievements of the Council during the current year. Among them were new disease resistant wheat varieties and new mango hybrids for agri-business farming.

Sri Lanka, HAU Plan Farm Research

Sri Lanka will conduct agricultural research along with Chaudhry Charan Singh Haryana Agricultural University, according to Mr Sumith Nakandala, First Secretary of the Sri Lankan High Commission. He was addressing the valedictory function of the faculty development programme in research management conducted by the Academy of Agricultural Research and Education Management of the university in Hisar recently. Mr. Nakandala said the CCSHAU had achieved success in its research and extension endeavours, hence Sri Lanka could benefit from its expertise.

He said like India agriculture was the mainstay of the Sri Lankan economy, contributing to about 22 per cent to the Gross National Product (GNP). Though coconut and tea were the major crops of Sri Lanka, yet the plant breeding, biotechnological and veterinary clinical techniques developed by the CCSHAU could be of help to the country.

He said he would submit a proposal regarding exchange of scientists, postgraduate students and the fields in which bilateral collaborations could be established to the Sri Lankan Government.

Prof J.B. Chowdhury, Vice Chancellor, said an exchange programme in agriculture research would help strengthen ties between the two nations.

Speaking on the utility of the training course, he emphasised that number of such trainings should be increased so that maximum teachers and scientists could be apprised of the latest developments in their fields and the present day agriculture scenario.

Prof. Chowdhury also stressed that the scientists should ensure the transfer of their research accomplishments as unless these reached the farmers there would be least use of investments in researches.

The Director of the Academy, Dr. I.J. Singh, revealed that the academy had trained nearly 400 scientists in education and research management during the past two years. Dr. V.P. Singh, the Course Director, said that the participating scientists were acquainted with general agriculture scenario and to the concepts of agricultural research projects. They were also familiarized with the application of project management techniques in the changing farming system.

Meanwhile, the university has invited entries for the Sir Chhotu Ram National Award for 1996-97.

The award carries a cash prize of Rs. 25,000 and a citation and is open for scientists engaged in any field of agriculture, social sciences, animal husbandry, forestry, fisheries, home sciences, basic sciences and humanities in national institutions, voluntary organisations and governmental and private agencies all over the country.

According to Professor Chowdhury, scientists would be judged by a committee on the basis of the results of the research made by them during the past five years.

Awards for Farm Scientists

Dr. R.S. Paroda, President of the National Academy of Agricultural Sciences, said that the academy had decided to give awards to young scientists. He was addressing a gathering in Ludhiana on the eve of the Third National Agricultural Science Congress being held on the PAU campus. Dr. Paroda admitted that there was a leadership crisis at various levels in the country. The thrust was on the development of human resource and agriculture.

He said 10,000 students were graduating every year, apart from 30,000 teachers, scientists and extension workers already engaged in agricultural research and development in several universities and ICAR institutes. "The changing agricultural scenario will require different types of scientists", he said.

Listing the achievements of the National Academy of Agricultural Sciences, Dr. Paroda said the academy, which was five years old, had 250 elected fellows from various disciplines. The academy had organised a seminar on the management of water at Bhubaneshwar and prepared a national policy paper on water management.

It had organised the International Crop Sciences Congress in Delhi last year in which 1500 delegates, including 500 foreign participants, took part. The academy was preparing five years' perspective planning for the country.

Dr. Paroda said India had achieved success in potato production. "We had doubled our oil production and cut the oil bill from Rs 1000 crore to Rs.300 to Rs.400 crore", he added.

Scholarships for Agriculture, Allied Subjects

The Indian Council of Agricultural Research (ICAR) is reported to have decided to provide national talent scholarships to bright students pursuing degree courses in agriculture and allied sciences subjects.

Dr. R S Paroda, ICAR Director General, said the new scholarship support of Rs. 400 a month would start with the successful candidates of the All India Agricultural Universities Entrance Examination scheduled for May 25. Though the scheme had been approved for the time being to the 1997-98 and 1988-89 sessions, it would be included in the ninth plan for continuity.

Initially, the scholarship would be given to the top 300 students coming out successful in the All India Entrance Test and opting to pursue their studies in an agricultural university outside their home state. This was expected to broadbase agricultural education and promote farm graduates and scientists, he said.

News from UGC

Countrywide Classroom Programme

Between 16th and 23rd April, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

17.4.97

"Exploration of Atomic Minerals-II"

"Fibre Connectors and Splices"

"Existentialism"

19.4.97

"Mathe Majik"

"Human Rights"

"Nematode : The Hidden Killer"

20.4.97

"Regatta : Yacht Racing"

"Kurja : Anthropoides Virgo (Rajasthani Love Bird)"

"The Voyager : The Grand Tour"

22.4.97

"Question Time"

"Food Technology for Entrepreneurs"

IInd Transmission

1.00 p.m. to 2.00 p.m.

16.4.97

"Budhism in Andhra Pradesh-II : Spread of Buddhism in Andhra Pradesh"

"Fun with Fins"

"Vastuprakash"

17.4.97

"Future of Science and Technology in India"

"Earthquakes : An Indian Perspective-II"

"Paul Scott's Connection with India"

18.4.97

"Meghnad Saha : His Voyage to the Physics to Stars"

"Women in Profession : Architecture"

19.4.97

"Images of Macbeth"

"Understanding Cinema-XIII How Films are Made-II"

20.4.97

No Telecast

21.4.97

"Question Time"

"Physics Nobel Laureate Prof. Klaus Von Klitzing on Quantum Hall Effect"

22.4.97

"Water Quality Management-II : Assessment"

"Ways of Thinking-Sep-III: World of Waves"

23.4.97

"Budhism in Andhra Pradesh-III : Buddhist Art in Andhra Pradesh"

"Fero Cement"

"Plant Diseases-I"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

16.4.97

"दो तीन का नियम - 1"

"असंगठित महिला श्रमिक"

18.4.97

"डायबेटिक रेटिनोपैथी"

21.4.97

"औद्योगिक क्षेत्र में मानवीय संबंध - 2"

"मिखाईल बख्तिन - 3"

23.4.97

"दो तीन का नियम - 2"

"फैलता ज़हर प्रदूषण का"

News from Abroad

Education & Technology in C'Wealth

The Commonwealth Secretariat has commissioned a major Convention with the theme of Education and Technology in the Commonwealth — Making the Transition, planned to coincide with the triennial Commonwealth Conference of Education Ministers (CCEM), to be held in Botswana in July 1997. The convention is being organised by the British Council and IDP Education Australia in consultation with the Commonwealth of Learning and Association of Commonwealth Universities. It will focus on the introduction of transitional strategies in Commonwealth countries, centered on current examples of successful implementation and the potential use of new technologies to gain maximum educational and economic benefits.

The highlights of the convention include : (i) A *Symposium* focussing on key pan-Commonwealth themes in education : the *development of appropriate technology for education delivery and the opportunities and challenges these developments bring*; (ii) A Showcase of the best education practice around the Commonwealth; *case studies of appropriate technologies and transitional models*, mechanisms of support *for learners and teachers*, flexible delivery systems and lifelong learning; (iii) An Exhibition of the work, products and services of commercial organisations and academic institutions involved in the development of new approaches; (iv) Displays illustrating innovative developments in educational technology; and (v) Sponsorship Opportunities for organisations interested in a high profile image at this important education forum.

Further details may be had from: Helena Sharp, The British Council, 10 Spring Gardens, London SW1A 2BN, United Kingdom. Tel: + 44 171 389 4274, Fax: + 44 171 389 4758, Email: helena.sharp@britcoun.org.

Cloning Ethically Unacceptable — WHO

The World Health Organization (WHO) considered the use of cloning for the replication of human individuals to be ethically unacceptable as it would violate some of the basic principles which govern medically assisted procreation, according to the Director-General of WHO, Dr. Hiroshi Nakajima.

Dr Nakajima said the recent announcement of the successful cloning of an adult sheep by a team of scientists in Scotland "has raised great interest and also great concern in all sectors of society".

The Director-General said that in 1992, the Special programme of Research, Development and Research Training in Human Reproduction (HRP) stressed that "there is a universal consensus on the need to prohibit extreme forms of experimentation, such as human cloning, interspecies fertilisation, the creation of chimeras and, at present, alteration of the germcell genome".

"WHO would like to propose that these guiding principles should serve as a starting point for the public debate required at national and international levels to establish the necessary norms and safeguards", Dr. Nakajima said.

He pointed out, however, that opposition to human cloning should not lead to an indiscriminate ban on all cloning procedures and research.

Performance Measurement in Libraries

The second Northumbria International Conference on performance measurement in libraries and information services will be held during 7-11 September 1997 at Longhirst management training and conference centre, Northumberland, England.

To be organised by Department *of Information and Library* Management, University of Nurthumbria, Newcastle, England, the *conference will focus* on Public libraries, Electronic environment, Document delivery methodologies, Research projects, Evaluating performance measurement, Effectiveness of performance measurement, Performance appraisal, Performance related pay, Building a climate of continuous improvement, Quantitative analysis, and Benchmarking.

Further details may be had from The Manager, Information North, Bolbec Hall, Westgate Road, Newcastle upon Tyne NE2 3EA, UK.

BOOK REVIEW

A Nice Attempt Worth Further Follow Up

H. Mohindra Chawla*

V.R. Dani. Organic Spectroscopy. New Delhi, Tata McGraw Hill, 1995. Pp.VI+478. Rs. 240/-

The present volume is a collection of lecture notes prepared by the author for postgraduate students of Bangalore University on deduction of structure of organic compounds from spectral data and covers ultra violet, infrared, NMR and mass spectroscopy. The book is divided into five chapters. Four chapters are devoted to spectroscopic techniques (UV, IR, NMR and MS) while the fifth chapter contains "Composite Problems" describing use of a combination of two or more spectroscopic methods for structural elucidation.

The author has presented a detailed treatment to various spectroscopic techniques and a good number of examples are discussed to elucidate the structure of various compounds from given spectroscopic details. The book is a good attempt at the subject and would be useful to students preparing for their Honours/Master's degree in Chemistry.

However, the reviewer finds this book intriguing in several aspects. The author starts with a brief history of the subject, jumps to the most advanced level of instrumentation and dives back to the fundamentals again. He delves into the theoretical aspects, comes again to the discussion of simple examples and so on so forth. The treatment of the subject appears to be haphazard. For instance, in the chapter on *Ultraviolet Spectroscopy*, the author discusses the instrumentation part but does not discuss modern advances in the subject. The treatment of the subject, instrumentation and experimental techniques, given in the book seem to convey that the book is intended for practical applications as is also indicated in the preface. The author, however, starts discussing the theoretical treatment of the subject which extends to Frontier-Orbital Theory, Molecular Orbital Methods, Vibrational Effects, Singlet & Triplet states, etc. After all these details, the author discusses the empirical approach to structural deduction from simple spectra of alkanes, alkenes, etc which becomes pedagogically impractical. This section also includes various rearrangement reactions that can be studied by ultra violet spectroscopy (e.g., on page 31). Again there is a discussion on the energy level diagrams followed by discussions on energy calculations and UV spectroscopy of various types of polymers followed by electronic transitions in aromatic structures. This section is further followed by a section on "Applications of UV spectroscopy". One is also intrigued by the use of various term without first defining them. Perhaps the author assumes knowledge of several branches of chemistry on the part of the student and uses that knowledge for discussing their UV spectroscopy thereby making the reading of the book difficult for beginners in the subject. For example, UV spectroscopy of the Wagner Meerwein type rearrangement (page 31), the bent and the linear structures of acetylenes, the formation of thiosemicarbazone, semicarbazone, steroidal structures, decalins, carotenoids, retinal, etc have been given without realizing the level of readership the book is directed to. Similarly the author assumes the knowledge of the excited and the triplet states of complex naturally occurring molecules like flavanones, flavanoids, peptides, etc on the part of the reader. The spectra used in the book have been purported to be actual spectra but none of the UV spectra given in the book are the actual UV spectra. The book has several printing mistakes, e.g., while on page 54, figure 1.30 is captioned as "Free Electron Model for Naphthalene", there is no naphthalene structure in this figure. The structure given is that of stilbene and not of naphthalene. Similarly, on page 69, the structure of aniline is wrong. Similar mistakes have been found on some other pages as well. The author does not describe how to identify the singlet and the triplet states of molecules nor does he state how UV spectrum is used for structural elucidation of natural products before discussing spectral details. For instance, while UV spectrum in the presence of ionizing reagents is commonly used for elucidating structure of flavanoids, none of such applications are given. These omissions mean that the book is for general reading on spectroscopic methods and not for special applications discussed as it does not cater to the needs of specialists.

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* *Professor, Department of Chemistry, Indian Institute of Technology, New Delhi-110 016.*

The IR spectra given in the chapter on "Infrared Spectroscopy" are badly drawn or re-traced. They look as if somebody has drawn the spectra with a shaky hand. Similarly, on page 109, the 'Plane-out-of bending' shown for benzene ring show hydrogen(+) without defining what it means. Similarly the author writes about orbital symmetry rules without defining what is symmetry and the symmetry elements. The definitions of various symmetry principles are lacking. Similarly the author should have defined the anti-symmetry and as-symmetry before taking up their spectroscopic meanings and usages. Likewise, the (+) and (-) on page 117 have not been explained. Theoretical discussion on the subject on "Infrared Spectroscopy" on page 121 does not constitute theory of infrared spectra. The author has discussed Fermi resonance as well as many other topics without defining/explaining them. Many of the topics discussed perhaps could be obviated for a book on organic spectroscopy for a general reader for the sake of brevity and cohesiveness.

Analogously, the conformational analysis by IR spectroscopy is confusedly written. There is a very poor reproduction of the infrared spectra in the whole chapter. The structure of glycine given on page 150 is wrong. The charges shown on page 150 in the case of aniline resonance structures are too large to be appreciated. The same comments can be made in the case of several NMR spectra given in the book. The theoretical discussion on NMR spectroscopy, calculations of 'J' values and splitting sprinting patterns is extensive and requires drastic cuts in order to be useful for understanding the subject. The book also discusses the theory of techniques like "Cosy NMR" and decoupling methods without explaining adequately the usefulness of these methods.

The structure given on page 313 for imidazothiol is wrong. When compared to the other chapters, chapter on "Mass Spectrometry" has been written in a better way but it requires modifications in the presentation of matter. For example, the bond breaking examples on page numbers 378, 379 and 397 are required to be modified.

The chapter on *composite problems* describes the method of deducing the structure from the spectroscopic evidence and contains 15 solved problems. Whereas the chapter on 'ultra violet spectroscopy' concludes with some exercises for students, chapters on NMR, IR and mass spectra do not have problems in the form of exercises.

The presentation of the book is very sketchy and lacks uniformity. The style of references, size and shape of structural diagrams and other figures leave many things to be desired in this age of advanced printing technologies. Inconsistency is found even in the bibliographic section, e.g., the reference books listed sometimes contain the year of publication, the publisher and the place of the publication while at other times it does not have the required information which reflects a poor level of scientific editing for the present book. From the list of references provided for the book, it seems that the latest book referenced by the author on UV spectroscopy has been the 1962 edition of G.M. Borrow's Introduction to molecular spectroscopy while for infrared spectroscopy, he lists the 1964 edition of Szymansky. Similarly for mass spectrometry he has cited D.H. William's 1981 work while for NMR he cited 1987 work of Sanders and Hunters', 'Modern NMR spectroscopy: A guide for chemists'. Several classics on the subject have not been referred even as a source of further reading. Further, some of these references are given without any year of publication, the name of the publishers and the year of publication.

In conclusion, the book is a nice attempt of the author to bring theoretical aspects of spectroscopic techniques nearer to their application for organic analysis. The theoretical principles are treated in the same way as any physical chemist would do but applications are not given the way organic chemists look at the use of spectroscopic techniques for identification purposes. The treatment of the subject lacks coordination and organisation. It would be better if the author restates his goals and readership and improves the book in its second edition either to provide a text for solving problems by using spectroscopic methods or restricts himself to theoretical aspects. Alternatively, he should present the material in cohesive manner. A perusal of several books published on spectroscopic identification of organic compounds in recent years would be a good guide for the author. Nonetheless, the book may be useful to libraries and overall it can be termed a good attempt by the author which must be followed by its betterment in future editions.

RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Ramachandra, Borse Tukaram. **Agricultural information generation and its utilisation in Khandesh.** HS Gour. Prof R G Prasher, Department of Library and Information Science, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

Psychology

1. Askari, Saeid. **Post-traumatic stress disorder and somatic complaints in relation to psycho-social resources.** Panjab. Dr V V Upmanyu, Department of Psychology, Panjab University, Chandigarh.

2. Balain, Shashi Bhushan. **A study of personality stress, and coping among cancer patients.** Panjab. Prof Jitender Mohan, Department of Psychology, Panjab University, Chandigarh.

3. Dehestani, Mehdi. **A cross cultural study of the prevalence of depressive symptoms and depressive severity in Iranian and Indian adolescents.** Panjab. Dr V V Upmanyu, Department of Psychology, Panjab University, Chandigarh.

4. Gandhi, Anupama. **The role of work values and organisational climate in job satisfaction : Employee commitment and job performance.** Panjab. Dr J M Jerath, Department of Psychology, Panjab University, Chandigarh.

5. Gurprit Kaur. **A comparative study of perceived stress, personality, family environment and eating habits of obese and normal weight adolescents.** Panjab. Dr Meena Sehgal, Department of Psychology, Panjab University, Chandigarh.

6. Joshi, Meeta. **An environmental study of managerial effectiveness and its correlates in public and private organisations.** Panjab. Prof Jitender Mohan and Dr S K Chadha, Department of Psychology, Panjab University, Chandigarh.

7. Seth, Jyoti. **Dynamics of ethnic identity and the mass-media : An exploratory study of Indian immigrants in the USA.** Panjab. Prof P N Pimpley, Department of Sociology, Panjab University, Chandigarh.

Sociology

1. Chavan, Shivajirao Madhavrao. **A study of role conflict among working women in Solapur.** Shivaji. Dr Savita Joshi, Department of Sociology, Shivaji University, Kolhapur.

2. Gupta, Deepak. **Work programme for prisoners : A study of the organisation of prison labour in a Central Jail of MP.** HS Gour. Dr J D Sharma, Department of Criminology and Forensic Science, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

3. Kotikela, Devadas Chennakrishnayya. **The berads of Kolhapur District : A sociological study.** Shivaji. Dr P B Draxe, Department of Sociology, Shivaji University, Kolhapur.

4. Mishra, Shivani. **Multi technique approach for explosive detection.** HS Gour. Prof D Mukhariya, Department of Criminology and Forensic Science, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

5. Pandey, Vijay Ku. **Study of women offenders in prisons of MP.** HS Gour. Dr H S Maheshwari, Department of Criminology and Forensic Science, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

6. Rezail, Ahmed. **Kurdish ethnic nationalist movement in Iran : A sociological study.** Panjab. Prof P N Pimpley, Department of Sociology, Panjab University, Chandigarh.

Anthropology

1. Kewal Krishan. **Limb bilateral asymmetry and footprints of male adult Gujjar population in parts of Punjab and Haryana.** Panjab. Dr R N Vashisht, Department of Anthropology, Panjab University, Chandigarh.

2. Lakhan Pal, Meenu. **Growth status, physique and nutritional profile of Rajput children of Una and Narkanda areas of Himachal Pradesh : A comparative study to investigate the effect of altitude.** Panjab. Dr Rajan Gaur, Department of Anthropology, Panjab University, Chandigarh.

Political Science

1. Arya, Ashok M. **Madhya Pradesh mein Mukhya Mantri ka pad evam sthiti : Sundarlal Patwa ke vishesh sandarbh mein.** Vikram. Dr Mahesh Maheshwari, School of Studies in Political Science, Vikram University, Ujjain.

2. Bokil, Yashodhan Shantaram. **The changing nature of Maharashtra politics and decline of the Congress Party, 1985-95.** Shivaji. Dr A S Chousalkar, Department of Politics, Shivaji University, Kolhapur.

Economics

1. Chitte, Gurshant Nilkanth. **A socio economic study of the textile workers in decentralised sector in Solapur District.** Shivaji. Dr V S Mangnale, Department of Economics, Shivaji University, Kolhapur.

2. Prasad, A K. **Impact of the overlapping of the capital and money markets on economic sectors and social sections.** Kerala. Dr M Kunhaman, Department of Economics, University of Kerala, Kariavattom.

3. Sharma, Ajay Kumar. **The nature, extent and determinants of non-agricultural employment in Himachal Pradesh : A comparative study of tribal and non-tribal areas.** HP. Dr

Dalip Singh Thakur, Department of Economics, Himachal Pradesh University, Shimla.

4. Sharma, Prit Lal. **Diversification of agriculture in Himachal Pradesh : A study of trends and constraints**. HP. Dr Ranveer Singh, Department of Economics, Himachal Pradesh University, Shimla.

5. Sindu Pillai, A. **Dynamics of Kerala agriculture**. Kerala. Dr M Kunhaman, Department of Economics, University of Kerala, Kariavattom.

6. Vajpayee, Shobha. **Adivasi bahul Dhar Jile ke gramin vikas mein ekikrit gramin vikas karyakram ka yogdan : Ek mulyankan, 1985-95**. Vikram. Dr Ramratan Sharma, School of Studies in Economics, Vikram University, Ujjain.

Public Administration

1. Agarwal, Neerja. **Government policy and the export competitiveness of the Indian garment industry**. Panjab. Dr (Mrs) Asha Mehta and Dr B S Ghuman, Department of Public Administration, Panjab University, Chandigarh.

2. Chaudhary, Sonali. **School administration in Haryana with special reference to District Kaithal**. Panjab. Prof Pawan K Kamra, Department of Public Administration, Panjab University, Chandigarh.

3. Gupta, Jayashree. **Organisation and management of internationally assisted population projects in India**. Panjab. Prof O P Minocha, Department of Public Administration, Panjab University, Chandigarh.

4. Negi, Sudesh. **Educational administrators : A study of tribal and non-tribal districts in Himachal Pradesh**. HP. Dr R D Sharma, Department of Public Administration, Himachal Pradesh University, Shimla.

5. Sengupta, Sulagna. **Women in squatter settlements : Gender perceptions and Government policies**. Panjab. Prof Pam Rajput and Dr B S Ghuman, Department of Public Administration, Panjab University, Chandigarh.

6. Suwanasri, Pramual. **Administration of health services in Thailand : A case study of Pitsanulok Province**. Panjab. Prof S L Goel, Department of Public Administration, Panjab University, Chandigarh.

7. Yumnam, Arun Kumar. **Government policy and administration for tribal development programmes in Manipur**. Panjab. Dr S L Kaushik, Department of Public Administration, Panjab University, Chandigarh.

Education

1. George, Reena. **A study of the defence mechanisms adopted by underachieving adolescents in the age group 13-17**. Kerala. Dr Mercy Abraham, Department of Education, University of Kerala, Thiruvananthapuram.

2. Jalilvand, Hossein. **Effectiveness of Bruner's model of teaching on concept learning in relation to the cognitive styles and intelligence at the secondary school stage in Iran**. Panjab. Prof Harish Sharma, Department of Education, Panjab University, Chandigarh.

3. Ranjit Kaur. **A study of the input-output relationships of District Institutes of Education and Training, DIETs' for improving education of elementary school teachers in Punjab**. Panjab. Dr S P Gupta, Department of Education, Panjab University, Chandigarh.

Commerce

1. Anil Kumar, K. **Identification and evaluation of the negative impacts of tourism in Kerala**. Kerala. Dr S V Sudheer, Department of Commerce, University of Kerala, Thiruvananthapuram.

2. Devadasan, K. **Primary service co-operatives in Northern Kerala : An evaluative study**. Kerala. Dr Resia Beegam, Department of Commerce, University of Kerala, Thiruvananthapuram.

3. Jacob, K K. **Industrial relations in public sector in Kerala**. Kerala. Dr S Mohanan, Department of Commerce, University of Kerala, Thiruvananthapuram.

4. Rao, C K M. **Growth and prospects of cement industry in Andhra Pradesh**. Shivaji. Dr V S Manganale, Department of Commerce, Shivaji University, Kolhapur.

Management

1. Bajpai, Ashish. **An enquiry into the contemporary operational problems of Indian foreign trade with particular reference to long-term prospects at 2001**. HS Gour. Prof H C Sainy, Department of Management, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

2. Prasad, Reshmi R. **Performance evaluation of women managers in public sector industries in Kerala**. Kerala. Dr M K Ramachandran Nair, Institute of Management, University of Kerala, Thiruvananthapuram.

HUMANITIES

Philosophy

1. Ishwar Singh. **Ideology, power and communication : A study of forms of legitimisation**. Panjab. Prof Bhuvan Chandel, Department of Philosophy, Panjab University, Chandigarh.

2. Jayakumaran, B. **Concept of alienation : An existentialist approach**. Kerala. Dr D Nesy, Department of Philosophy, University of Kerala, Kariavattom.

Language & Literature

1. Nair, Mini R. **Problems of self-translation from Malayalam to English with special reference to The Legends of Khasak**. Kerala. Dr A P Andrewskutty, Department of Linguistics, University of Kerala, Kariavattom.

English

1. Arora, Rajneesh. **A study in the discourse analysis of dialogue in drama with special reference to John Osborne's Look Back in Anger**. Panjab. Dr Pushpinder Syal, Department of English, Panjab University, Chandigarh.

2. Ganapatye, Anita Arun. **The poetry of Seamus Heaney : A critical assessment**. Shivaji. Dr P B Patil, Department of English, Shivaji University, Kolhapur.

3. Kang, Manpreet Kaur. **Seeking a female identity : Adrienne Rich and Anne Sexton**. Panjab. Dr Manju Jaidka, Department of English, Panjab University, Chandigarh.

4. Mathews, Manju. **Literature of subversion : A study based on select reworkings of the Bible and the Mahabharata**. Kerala. Dr Joney George, Institute of English, University of Kerala, Thiruvananthapuram.

5. Rajagopal, Vidya. **Down among Fay Weldon's women**. Kerala. Dr K Radha, Institute of English, University of Kerala, Thiruvananthapuram.

6. Ramachandran, Smita. **Ethical and metaphysical concerns in the novels of Thomas Keneally**. Kerala. Dr K Radha, Institute of English, University of Kerala, Thiruvananthapuram.

7. Surinder Singh, Rachna. **Novel and cinematography : A study of the selected novels of Thomas Hardy, Joseph Conrad and James Joyce**. Panjab. Prof M L Raina, Department of English, Panjab University, Chandigarh.

Sanskrit

1. Dharambir. **A critical study of Hatha Tattva Kaumudi of Sundara Deva**. Panjab. Dr Dhanraj Sharma, Department of Sanskrit, Panjab University, Chandigarh.

2. Suman. **Laukika Sanskrit sahitya mein Shiv ka swarup**. Panjab. Dr Anirudh Joshi, Department of Dayanand Chair for Vedic Studies, Panjab University, Chandigarh.

Punjabi

1. Balwinder Kaur. **Nanak Singh de navalan vich viaah sambandh**. Panjab. Dr Surinder Kumar Deweshwar, School of Punjabi Studies, Panjab University, Chandigarh.

2. Kulwinder Kaur. **Dalip Kaur Tiwana de novelan vich pendu te shahri jiwan sanderta da dwandh**. Panjab. Dr Sukhjit Kaur, School of Punjabi Studies, Panjab University, Chandigarh.

3. Rajbir Kaur. **Nanak Singh da navlan vich veshwa dee samasya**. Panjab. Dr B P Vasishta, School of Punjabi Studies, Panjab University, Chandigarh.

Hindi

1. Jain, Awadhesh Kumar. **Hindi nibandh mein vyanga kee parampara aur Harishankar Parsai ke nibandh sahitya ka mulyankan**. HS Gour. Dr Suresh Acharya, Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

2. Jain, Chanda. **Shivkumar Shrivastava ka vyaktitva aur krititva**. HS Gour. Dr Suresh Acharya, Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

3. Shrivastava, Nina. **Nirala ke geeton ka sangitik anusheelan**. HS Gour. Dr R D Mishra, Department of Hindi, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

4. Sindhu, C. **Meharunissa Parvez ka katha sahitya**. Kerala. Dr P Letha, Department of Hindi, University of Kerala, Thiruvananthapuram.

5. Tare, Akhilesh. **Nimari Boli kee shabda sampada : Ek vishleshnatmak adhyayan**. Vikram. Dr Ravindra Chaure, School of Studies in Hindi, Vikram University, Ujjain.

Tamil

1. Thangaraju, D. **Influence of Tamil grammatical works on Kerala Panineeyam**. Kerala. Dr K Kuttalam Pillai, Reader, Department of Tamil, University of Kerala, Thiruvananthapuram.

Geography

1. Ravinder Kaur. **Urban-rural relations in India : A case study of the inter state Chandigarh Region**. Panjab. Dr Surya Kant, Department of Geography, Panjab University, Chandigarh.

History

1. Abdul Vaheed, A. **Shanmugham Chetty : The Diwan of Cochin**. Kerala. Dr A P Ibrahim Kunju, Department of History, University of Kerala, Thiruvananthapuram.

2. Ali, Vajiha. **Poorvi Malwa ke moorti shilpa evam sthapatya ka sameekshatmak adhyayan : Lagbhag panchvin sadi isa poorva se terahvin sadi isvi tak**. Vikram. Dr Mast Ram Singh, School of Studies in Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

3. Bhonsale, Madhuri. **Radhogarh chitra shaili ka sameekshatmak adhyayan**. Vikram. Dr (Ms) Sushila Pant, School of Studies in Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

4. Gupta, Kaushalendra Kumar. **Pashchimi Madhya Pradesh mein bhautiki jeewan tatha samajik rachna ka vishleshnatmak adhyayan, Tamrapashan yug se 6 vi shatabdi isa poorva**. Vikram. Dr Ashok Trivedi, School of Studies in Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

5. Nigam, Lalita. **Poorva Madhya kaleen Malwa ke samajik jeewan mein nari kee bhumika**. Vikram. Dr Ashok Trivedi, School of Studies in Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

6. Vashishtha, Chaitanya. **Prachin Bharat mein samajik vaniki, 400 isa poorva se 600 isvi tak sahityik srotoan ke adhar par**. Vikram. Dr Ashok Trivedi, School of Studies in Ancient Indian History, Culture and Archaeology, Vikram University, Ujjain.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from periodicals received in the AIU Library during March 1997

EDUCATIONAL PSYCHOLOGY

Joseph, K S. Fostering creativity in the classroom. **New Frontiers in Edn** 26(4), 1996, 335-51.

Lokanadha Reddy, G and Janak Kumar. Effectiveness of the remedial package in learning spoken English by low achievers at the secondary level. **Perspectives in Edn** 13(1), 1997 43-52.

Shah, Sona and Shastri, Jigisher. Television viewing pattern of preschool children and their home-television environment. **Perspectives in Edn** 13(1), 1997, 21-42.

EDUCATIONAL SOCIOLOGY

Gamson, Zelda F. Higher education and rebuilding civic life. **Change**. 29(1), 1997, 10-3.

WOMEN'S STUDIES

Cuban, Sondra and Hayes, Elisabeth. Women in family literacy programs : A gendered perspective. **New Direction for Adult and Continuing Edn** 70, 1996, 5-16.

Thomas, Annu J. Empowerment of women : An analysis of gender training frameworks for open learning systems. **Indian J of Open Learning** 5(2), 1996, 1-9.

EDUCATIONAL ADMINISTRATION

Anand, Y K and Lal, H H. Double degree approach : Integration of general and engineering education. **Indian J of Tech Edn** 19(3), 1996, 24-7.

Carr, Stuart C and others. Development through educational collaboration : Facilitating social equity. **Hr Edn Policy** 10(1), 1997, 81-91.

Davies, Stuart W and Glaister Keith W. Spurs to higher things : Mission statements of UK universities. **Hr Edn Q** 50(4), 1996, 261-94.

Evers, Colin W and Lakomski, Gabriele. Science in educational administration: A postpositivist conception. **Ednl Admn Q** 32(3), 1996, 379-402.

Luby, Antony. Reflections on a "new" university's strategy making process. **Q Assurance in Edn** 4(4), 1996, 9-16.

McGinn, Noel F. Education, democratization, and globalization: A challenge for comparative education. **Comp Edn Rev** 40(4), 1996, 341-57

Morrison, T R. Global transformation and the search for a new education design **J of Hr Edn** 19(2), 1996, 181-218.

Sarveswara Rao, B. Academic staff colleges and development of higher education. **J of Ednl Plans and Admn** 10(2), 1996, 179-83.

Schlomerkemper, Jorg. From coeducation to co-operation. **Edn** 53, 1996, 65-75.

Singh, Sujata and Pushpanadhan, K. Change, challenge and leaderships: Women in educational management. **Progress in Edn** 71(6), 1997, 127-30.

TEACHERS & TEACHING

Payton, Robert L. Presidents as public teachers. **Ednl Record** 78(1), 1997, 55-9.

EDUCATIONAL RESEARCH

Delaney, Anne Marie. The role of institutional research in higher education : Enabling researchers to meet new challenges. **Research in Hr Edn** 38(1), 1997, 1-16.

EDUCATIONAL TECHNOLOGY

Lee, Victor and others. Computer aided distance learning : A case study. **Open Learning** 12(1), 1997, 58-62.

Oblinger, Diana G. High tech takes the high road: New players in higher education. **Ednl Record** 78(1), 1997, 30-7.

Roth, Brenda F and Sanders, Denisha. Instructional technology to enhance teaching. **New Directions for Hr Edn** 94, 1996, 21-32.

Subbayamma, G. Technology mediated support services. **New Frontiers in Edn** 26(4), 1996, 384-94.

EDUCATIONAL EVALUATION

Atma Ram. Improving the question paper. **J of Hr Edn** 19(2), 1996, 247-50.

ECONOMICS OF EDUCATION

Ahmad, Muzaffer. Financing of primary education in Bangladesh. **Perspectives in Edn** 13(1), 1997, 53-62.

Clorisa Phillips, E and others. Responses to reduced state funding. **New Directions of Hr Edn** 94, 1996, 9-20.

Karr, Scott and Kelley, Robert V. Attracting new sources of research funding. **New Directions for Hr Edn** 94, 1996, 33-43.

Psacharopoulos, George. Public spending on higher education in developing countries : Too much rather than too little. **Eco of Edn Rev** 15(4), 1996. 421-2.

Robertson, David. The learning bank : Rethinking the funding of relationships in British higher education. **Hr Edn Rev.**, 29(2), 1997, 17-33.

Rodrigues, Anthony J and Wandiga, Shem O. Cost sharing in public universities : A Kenyan case study. **Hr Edn Policy** 10(1), 1997, 55-80.

Sharma, Mridula. Privatization of higher education in India: Some lessons from USA. **J of Hr Edn** 19(3), 1996, 375-99.

Tilak, Jandhyala B G. The dilemma of reforms in financing higher education in India. **Hr Edn Policy** 10(1), 1997, 7-21.

ADULT EDUCATION

Beder, Hal. Popular education: An appropriate educational strategy for community-based organizations. **New Directions for Adult and Continuing Edn** 70, 1996, 73-83.

Sissel, Peggy A and Hohn, Marcia Drew. Literacy and health communities : Political partners in practice. **New Directions for Adult and Continuing Edn** 70, 1996, 59-71.

DISTANCE EDUCATION

McCulloch, Kenneth H. Participating education in distance learning. **Open Learning** 12(1), 1997, 24-30.

Nawal Kishore, and Saxena, Karunesh. Support services : A case study of EADTU and UKOU — Relevance for IGNOU. **New Frontiers in Edn** 26(4), 1996, 364-74.

Ramanujam, PR. The role and contribution of STRIDE in the development of human resources for distance/open learning. **Indian J of Open Learning** 5(2), 1996, 70-84.

Sedlak, Robert A and Phillip Cartwright, G. Two approaches to distance education : Lessons learned. **Change** 29(1), 1997, 54-60.

Weedon, Elisabet. A new framework for conceptualising distance learning. **Open Learning** 12(1), 1997, 40-51.

COMPARATIVE EDUCATION & AREA STUDIES

Farrant, John H and Afonso, Lioudmila M. Strategic planning in African universities: How relevant are Northen models? **Hr Edn Policy** 10(1), 1997, 23-30.

BIOGRAPHICAL PROFILE

Halliburton, David. John Dewey : A voice that still speaks to us. **Change** 29(1), 1997, 24-9.

EDUCATION NEWS INDEX

A list of select articles and editorials on education from newspapers received in the AIU Library during March 1997

EDUCATIONAL PSYCHOLOGY

Anand, S C. Adolescent problems cry for attention. **The Hindu** 18.2.97.

Atre, Raja Ram. Overcoming exam fever. **Deccan Chronicle** 24.2.97.

EXAMINED TO death: Are we rearing a generating of zombies? (Editorial). **Indian Express** 19.2.97.

Francis Peter, S J. Metacognition: A novel method for learning. **The Hindu** 11.2.97.

Ghosh, Susmita. Bringing up a complete child. **The Hindustan Times** 13.2.97.

Koul, Prema. Managing exam anxiety. **Indian Express** 18.2.97.

Mariaos, J. Who is really educated. **The Hindu** 18.2.97.

Murali, Kadambari. The best years of your life ? **The Pioneer** 5.2.97.

Prashant Kumar. Caution! Principal ahead. **Deccan Chronicle** 26.2.97.

Raghaveeran, B and Kanchana, R. The neglect of creative stimulation. **The Hindu** 25.2.97.

Rahman, Maimuna S. Your college experience made easy. **Deccan Herald** 16.2.97.

Srinivasan, S R. The key to success. **The Hindu** 4.2.97.

Vijay Singh. Rote mishap. **Indian Express** 23.2.97.

EDUCATIONAL SOCIOLOGY

ALL QUOTA, no norms (Editorial). **The Hindustan Times** 24.2.97.

Bora, Prafulla Ch. Higher education: Its social relevance. **The Assam Tribune** 14.2.97.

Nataraj, M R. A different kettle of fish. **Deccan Herald** 18.2.97.

Qureshy, Ahtesham. For a planned boost to education. **The Pioneer** 5.2.97.

EDUCATIONAL POLICY & PLANNING

Chadha, Kumkum. How basic a right is education? **The Hindustan Times** 3.2.97.

EDUCATION AS a Victim (Editorial). **The Tribune** 4.2.97.

Jain, S S. The burden of 'bests'. **The Tribune** 17.2.97.

Naib, V P. Meeting the challenges of change. **Deccan Herald** 9.2.97.

OFF TO school (Editorial). **The Telegraph** 24.2.97.

THE ELUSIVE goal is education (Editorial). **The Hindu** 4.2.97.

EDUCATIONAL ADMINISTRATION

Ahmed, Firoz Bakht. Frantic search for V.C. **The Statesman** 9.2.97.

Amrik Singh. An early retirement age for teachers. **The Hindustan Times** 4.2.97.

Anati. Wanted: A management system for colleges. **Deccan Herald** 23.2.97.

Atma Ram. Autonomous colleges need of hour. **The Tribune** 17.2.97.

Chandramma, G P. Private schools need a close scrutiny. **The Hindu** 18.2.97..

ENGLISH MEDIUM schools (Editorial). **The Assam Tribune** 3.2.97.

Goswami, Dibya Hash. Is higher education worth it? **The Assam Tribune** 19.2.97.

Koul, Prema. Admission agonies. **Indian Express** 11.2.97.

REVITALISING THE education system (Editorial). **The Hindu** 20.2.97.

STOOPING TO confer (Editorial). **The Telegraph** 15.2.97.

Swaminathan, A V. "All work and no play" **The Hindu** 4.2.97.

UNWARRANTED FEARS (Editorial). **Deccan Herald** 17.2.97.

EDUCATIONAL BUILDING

Ramchandran, K. Compact campuses. **The Hindu** 10.2.97

EDUCATION & POLITICS

Sain, Satya. Whither fare expression? **The Statesman** 26.2.97.

CURRICULUM

Bhatnagar, Gaurav Vivek. From classroom to playroom. **The Hindu** 24.2.97.

Guha, Ranjini. Making history. **The Telegraph** 10.2.97.

Hathi, Daksha. Green remedies go to school. **Deccan Herald** 7.2.97.

Mathias, M. Geometry sans logic for school students. **The Hindu** 25.2.97.

LANGUAGE & LANGUAGE POLICY

Banerjee, Kamala. Today's engineers: Importance of learning English. **The Statesman** 13.2.97.

SCIENCE EDUCATION

Bidwai, Praful. Indian science in decline: Wages of malign neglect. **The Tribune** 4.2.97.

Garg, J P. Call to imbibe scientific outlook. **The Tribune** 3.2.97.

Howkas, Nigel. What use is science park? **The Statesman** 11.2.97.

Kaushik, Raj. Indian science : Support does not match results. **The Statesman** 28.2.97.

Kishore, S. Transporting scientific awareness. **The Hindu** 4.2.97.

Sandhu, Kulvinder. Teaching science in schools. **The Tribune** 10.2.97.

VOCATIONAL EDUCATION

Anand, Navneet. Cyber age choices. **Indian Express** 18.2.97.

Chawla, K S. PAU gears up for farm congress. **The Tribune** 17.2.97.

Chhina, Amanpreet and Bajwa, Anuraj Singh. MBE: The course in demand. **The Tribune** 3.2.97.

Dinesh Kumar. Looting management students. **The Tribune** 24.2.97.

Jas, Mitul. Hotel management and catering: At your service. **The Telegraph** 3.2.97.

Rajesh Kumar. Pharmacy: An exciting option. **The Pioneer** 12.2.97.

Ramachandran, K. Skills not mere knowledge. **The Hindu** 24.2.97.

Ratnakar, K S. Medical education needs change. **Deccan Chronicle** 24.2.97.

Shrivastava, Girish. The finer options. **The Hindustan Times** 19.2.97.

Tandon, Kumkum. How to tackle a group discussion? **The Pioneer** 10.2.97.

DISTANCE EDUCATION

Venkata Subbaiah, M. Open learning system. **Deccan Chronicle** 10.2.97.

TEACHERS & TEACHING

Inder Pal Singh. Beyond teaching and learning. **The Tribune** 24.2.97.

Karkaria, Urvaksh. To sir, with as assessment. **The Times of India** 21.2.97.

Lakshmi, J S V. Team teaching: A novel method. **The Hindu** 18.2.97.

Pathak, R L. Tuitions: Boom or bane? **The Tribune** 10.2.97.

Pinto, S J. Ambrose. Tests and tutorials : Some remedial measures. **Deccan Herald** 9.2.97.

Rajput, J S. Role of the teacher in 21st century. **The Hindustan Times** 18.2.97.

Sandhu, Kulwinder. The science of teaching. **The Telegraph** 17.2.97.

Sarwal, Anil. Teacher as a role model. **The Tribune** 24.2.97.

COUNSELLING & GUIDANCE

Frame, J Davidson. A paying proposition. **The Pioneer** 1.2.97.

EDUCATIONAL RESEARCH

Jha, Pankaj Kumar. See footnotes on campus life (All PhD. types). **The Pioneer** 2.2.97.

Maharajan, V S. Research takes back seat. **The Tribune** 10.2.97.

Parthasarathy, R. Doctoral thesis: Students' perceptions. **The Hindu** 4.2.97.

EDUCATIONAL TECHNOLOGY

Anand, Navneet. The informed revolution. **Indian Express** 25.2.97.

Goel, M K. The birth of the NET. **Deccan Chronicle** 23.2.97.

IS THE Internet compromising patent privacy? **The Hindu** 27.2.97.

Narayanan, L R A. Geoinformatics and human resources. **The Hindu** 23.2.97.

Singh, Priyanka. Can E-mail stand alone ? **The Economic Times**. 19.2.97.

Wal, Bhavna. Executive, educate thyself. **Indian Express** 25.2.97.

EDUCATIONAL EVALUATION

Bhaskara Rao, B. PUC revolution: A welcome move. **The Hindu** 18.2.97.

Munshi, Anju. A script for transparency. **The Telegraph** 10.2.97.

Murthy, R L and Mohan Rao, N A. Inter exams not enough to assess professional mettle. **The Hindu** 25.2.97.

Sethuraman, R. Do we need entrance examinations? **The Hindu** 11.2.97.

ECONOMICS OF EDUCATION

Christo, G G. Common regulatory framework is needed for self financing colleges. **The Times of India** 3.2.97.

INVESTING IN growth (Editorial). **The Economic Times** 22.2.97.

Nambath, Suresh. Gateway to prosperity. **The Hindu** 3.2.97.

Stone, Norman. Privatise Oxford and save it from itself. **The Times of India** 11.2.97.

LIBRARIES & BOOKS

Behal, Suchitra. Beeline for British books. **The Hindu** 2.2.97.

Bahl, Taru. Rapid reading, rapid gains. **The Tribune** 23.2.97.

Chopra, Ashok. Book to basics: The market and the reader leader. **The Times of India** 11.2.97.

_______ . Academic wasteland : Textbooks fail to make the grade. **The Times of India** 1.2.97.

Chowdry, T H. Now, liberalise information. **Indian Express** 17.2.97.

Foulds, Russell. Booking on the reader. **Deccan Herald** 10.2.97.

Mitra, Manajit. Bookloving Calcutta's test by fire. **The Times of India** 25.2.97.

Oppili, P. A fillip to the reading habit. **The Hindu** 3.2.97.

Parthasarathy, Anand. Towards the digital library. **The Hindu** 27.2.97.

Sambandan, V S. Books... and beyond. **The Hindu** 24.2.97.

Shankar, Shrishti Making light of libraries. **Indian Express** 16.2.97.

Umapathy, K S. Library as a teacher. **Deccan Herald** 16.2.97.

Venaik, Amandeep. Libraries at a premium. **The Hindustan Times** 12.2.97.

STUDENTS & STUDENT ACTIVITIES

Abha. Ragging's wrong signal. **Deccan Herald** 22.2.97.

HORROR OF higher education : Tackle sadistic ragging as a crime. **Indian Express** 17.2.97.

RAGGING AGAIN (Editorial). **Deccan Herald** 3.2.97.

STUDENTS OR animal (Editorial). **Free Press Journal** 1.2.97.

ADULT EDUCATION

Kanwar, Yogendra. NGO Vs govt-run literacy drives. **The Tribune** 10.2.97.

ELEMENTARY & SECONDARY EDUCATION

Bhatnagar, Gaurav Vivek. Five star schools are here. **The Hindu** 10.2.97.

Joshi, M M. A pinch of involvement and stir.... **The Hindustan Times** 13.2.97.

COMPARATIVE EDUCATION & AREA STUDIES

Choudhury, Chandra Abesh Sinha. Why we cannot match Oxford? **The Statesman** 5.2.97.

Rajagopalan, T. Higher education in the US-I. **The Hindu** 5.2.97.

_______. Higher education in the US-II. **The Hindu** 6.2.97.

Saikia, Devika. Education in Jorhat. **The Assam Tribune** 7.2.97.

Vedantam, Vastala. Attracting overseas students. **Deccan Herald**

INTERNATIONAL COOPERATION

Koshy, Thomas. A new trend in international studies. **The Hindu** 4.2.97.

INSTITUTIONAL PROFILE

Ahmed, Firoz Bakht. Institution with a mission : St. Stephen's College, Delhi. **The Hindustan Times** 5.2.97.

Chaturvedi, Ravi. A learner's paradise.: Sherubtse College, Bhutan. **The Statesman** 9.2.97.

Ghosh, Avijit. President's pleasure.: Indian Institute of Advance Study, Shimla. **The Pioneer** 9.2.97.

Gupta, Vinod. Answer to a prayer: Indian Institute of Technology, Kharagpur. **The Statesman** 2.2.97.

Kutsenkov, Anatoly. Hard times for Indology in Russia : Moscow Institute of Oriental Studies, Moscow. **The Pioneer** 24.2.97.

Mookerji, Nikhil. So much to care about: Indian Institute of Technology, Kharagpur. **The Statesman** 2.2.97.

Nahal, Chaman. In Cambridge do as dons do — scowl. **The Hindustan Times** 9.2.97.

Sharma, Ashwani. Time to be turfed out : Institute of Advanced Study, Shimla. **Indian Express** 22.2.97.

Wasan, Tarun. An institution where you can master finance : Indian Institute of Finance, Delhi. **The Times of India** 12.2.97.

BIOGRAPHICAL PROFILE

Ahmad, Firoz Bakht. An educationist with a cause : Virendera Singh. **The Statesman** 28.2.97.

Bhattacharyya, Hiranya Kr. A noted educationist departs: Prof K K Sharma. **The Assam Tribune** 24.2.97.

Chakravarti, Avijit. Books, always: Manzar Khan. **The Pioneer** 9.2.97.

Hazarika, Arup Kr. C V Raman: A scientist to remember. **The Assam Tribune** 28.2.97.

Mokerji, Nikhil. Of sterner stuff : Prof K L Chopra. **The Statesman** 2.2.97.

Prabhjot Singh. Learning to educate : Rajinder Nath. **The Tribune** 16.2.97.

Salvi, Dilip M. Prof J V Narlikar: Taking science to masses. **The Tribune** 13.2.97.

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,

NANDED

"DNYANTEERTH", VISHNUPURI,
NANDED-431 603.

Applications are invited for the following **Teaching posts** in the **Campus Schools**:

PROFESSORS **(3 POSTS)**

One each in the School of Life Sciences, the School of Chemical Sciences and the School of Earth Science.

READERS **(5 POSTS)**

School of Life Sciences	-	2 (1-SC, 1-Open)
School of Chemical Sciences	-	1 (NT)
School of Earth Science	-	1 (VJ)
School of Social Sciences	-	1 (ST)

LECTURERS — (A) **(6 POSTS)**

School of Life Sciences	-	1 (ST)
School of Chemical Sciences	-	2 (1-SC, 1-Open)
School of Earth Science	-	1 (ST)
School of Physical Sciences	-	1(VJ)
School of Social Sciences	-	1 (OBC)

(B) 2 POSTS

In the Campus School of Commerce & Management Sciences

(C)-PLACEMENT OFFICER

Note: Posts shown under (B) & (C) abore are on temporary/contract basis.

01. The above posts carry U.G.C. recommeded pay scales.

02. Candidates desirous of applying for more than one post should submit seperate applications.

03. Candidates belonging to reserved category must produce Caste Certificate issued by the competent authority of the State Govt. And validated by the concerned authority

04. In case suitable candidates of specified reserved category are not available, the posts will be filled by appointing other suitable candidates on temporary basis not exceeding a period of one academic year.

05. For reserved posts candidates belonging to backward classes as notified by the Govt. of Maharashtra will alone be considered.

06. Preference will be given to women candidates to the extent of 30% in each category.

07. Conditions may be relaxed in case of highly qualified and competent candidates.

08. Prescribed application form (a set of ten copies) can be had from the University Office in person on cash payment of **Rs. 200/-** or by post on submission of a crossed D.D. for Rs. 200/- drawn in favour of **Registrar, S.R.T.M.U., Nanded,** togetherwith a self-addressed cloth bound envelope (25 cm x 18 cm) bearing postage stamp worth Rs.15/-. Application form will be sent under certificate of posting. Last date for requisition of bank application forms by post is **20th April'97.**

09. Last date of submitting the prescribed application form complete in all respects is **30th April'97.**

10. Details regarding qualifications, specializations, are given in the booklet supplied alongwith the application form set.

11. No application shall be entertained if it is incomplete/ received after the last date/not forwarded through proper channel.

12. The interview of candidates found eligible will be preceded by Exposition/Colloquium.

13. The University will not be responsible for any postal lapses of delay.

14. The Selection Committee reserves the right to select highly qualified candidates, in absentia, for Professor's posts.

15. Candidates will have to attend interview at their own cost.

16. The University shall not be held responsible for postponement or cancellation of Scheduled interviews for any unforeseen/ unavoidable reason.

IMPORTANT NOTE: Candidates, who had applied for Professor's posts in response to the two earlier advertisements of this University need not apply again and even if they do so their applications will not be considered.

Advt. No : TP-1/97
Date : 29.3.97

Dr. T.R. Sontakke
REGISTRAR

AGRICULTURAL SCIENTISTS RECRUITMENT BOARD

KRISHI ANUSANDHAN BHAVAN, PUSA, NEW DELHI - 110 012

Advt. No. 1/97

Applications are invited for the following Scientific/Technical posts under the different institutes and at the Headquarters of Indian Council of Agricultural Research, New Delhi.

1. DEPUTY DIRECTOR GENERAL (FISHERIES), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI. (One Post)

Pay scale : Rs. 7600/- (Fixed)

Qualifications Essential : (i) Doctoral degree in Fish and Fishery Sciences/Monoculture/Fishery Technology/Zoology with specialisation in Fisheries or in allied subjects, (ii) An eminent Scientist/teacher having at least 8 years experience in the grade of Principal Scientist (Rs. 4500-7300) or in any equivalent position out of which 3 years experience should be in a Research Management Position or in an equivalent position. OR An eminent Scientist having proven record to Scientific contribution working in a reputed organisation/Institutes having 21 years experience in the relevant subject, out of which 3 years experience should be in a Research Management Position or in an equivalent position (iii) Evidence of contribution to research/teaching /extension education/management as supported by published work/ innovations. (iv) Specialisation in Fisheries or in allied subjects.

Desirable : Experience in Research Management in the field of Fishery Science with proven leadership.

ASSISTANT DIRECTOR GENERALS, DIRECTORS OF INSTITUTE AND JOINT DIRECTOR OF NATIONAL INSTITUTES

Pay Scale : Rs. 4500-7300

2. ASSISTANT DIRECTOR GENERAL (ACCREDITATION), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI. (One Post)

Qualifications Essential : i) Doctoral degree in any branch of Agricultural and Allied Sciences. ii) At least 5 years experience as a Principal Scientist (Rs. 4500-7300) or in an equivalent position. OR An eminent Scientist having proven record of Scientific contribution working in a reputed organisation/Institutes having at least 18 years experience in the relevant subject. iii) Evidence of contribution to research/teaching/extension education as supported by published work/innovations. iv) Specialisation and experience in Coordination, monitoring and evaluation of Agricultural Education in SAU System.

Desirable : Experience in Research Management Position.

3. ASSISTANT DIRECTOR GENERAL (HRD I), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI. (One Post)

Qualifications Essential : i) Doctoral degree in any branch of Agricultural Science and allied subjects. ii) and iii) As in Item No.2 (ii) and 2 (iii) above. iv) Experience in organising, teaching and training programmes/experience in manpower of planning or in monitoring/developing educational technology programme.

Desirable : Experience in Research Management Position.

4. ASSISTANT DIRECTOR GENERAL (AGRIL. RES. INFORMATION SERVICES), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI (One post)

Qualification Essential : i) Doctoral degree in Engineering (any branch) or Computer Science. ii) and iii) As in Item No. 2 (ii) and 2 (iii) above. iv) Experience in Network and Database Management.

Desirable : Experience in Research Management Position.

5. ASSISTANT DIRECTOR GENERAL (COMMERCIAL CROPS), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI. (One post)

Qualifications Essential : i) Doctoral degree in Genetics/Plant Breeding/Agricultural Botany. ii) and iii) As in Item No. 2 (ii) and 2 (iii) above. iv) Specialisation in the improvement of Commercial Crops.

Desirable : Experience in Research Management Position

6. ASSISTANT DIRECTOR GENERAL (HORTICULTURE), INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI. (One post)

Qualification Essential: i) Doctoral degree in Horticulture or other allied disciplines. ii) and iii) As in Item No. 2(ii) and 2 (iii) above. iv) Specialisation and experience on fruit crops.

Desirable : Experience in Research Management Position.

7 DIRECTOR, NRC ON COLDWATER FISHERIES, NATIONAL RESEARCH CENTRE ON COLDWATER FISHERIES, HALDWANI, NAINITAL.

Qualification Essential : i) Doctoral degree in Zoology, Fish and Fisheries or Life Science (Botany, Zoology and Biochemistry) ii) and iii) As in Item No. 2(ii) and 2 (iii) above iv) Specialisation in fisheries/aquatic environment research and development preferably in hilly areas.

Desirable : Experience in Research Management Position.

8. DIRECTOR, NATIONAL RESEARCH CENTRE FOR WOMEN IN AGRICULTURE, BHUBANESHWAR. (One Post)

Qualification Essential : i) Doctoral degree in any branch of Agricultural Science/Home Science/Social Science. ii) and iii) As in Item No. 2(ii) and 2 (iii) above. iv) Specialisation and experience in gender analysis and knowledge of its implication in Agriculture and allied areas.

Desirable : Experience in Research Management Position

9. DIRECTOR, CENTRAL INSTITUTE OF BRACKISHWATER AQUACULTURE, CHENNAI. (One Post).

Qualifications Essential: i) Doctoral degree in Zoology/Fisheries/Aquaculture. ii) and iii) As in Item No. 2(ii) and 2 (iii) above. iv) Specialisation in Brackishwater Aquaculture and Coastal Aquaculture.

Desirable : Experience in Research Management Position.

10. DIRECTOR, INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE, NEW DELHI. (One Post)

Qualifications Essential: i) Doctoral degree in Agricultural Statistics/Statistics/Computer Science or related disciplines. ii) and iii) As in Item No. 2(ii) and 2 (iii) above. iv) Specialisation in modern statistical techniques.

Desirable : Experience in Research Management Position.

11. JOINT DIRECTOR, NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL. (One Post)

Qualifications Essential : i) Doctoral degree in Dairy/Animal Science/or other allied discipline. ii) and iii) As in Item No. 2(ii) and 2 (iii) above. iv) Specialisation and research experience in any field of Basic Science/Animal Science/Dairy Processing/Dairy Production.

Desirable : Experience in Research Management Position

12. JOINT DIRECTOR (EXTENSION EDUCATION), INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR. (One Post)

Qualifications Essential : i) Doctoral degree in any branch of Veterinary Animal Sciences/Extension/Agricultural Extension. ii) and iii) As Item No.2(ii) and 2 (iii) above. iv) Specialisation in Transfer of Technology/Lab to Land Programming related to Veterinary/Animal Science/Extension.

Desirable : Experience in Research Management Position.

13. JOINT DIRECTOR (CADRAD), INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR. (One Post)

Qualifications Essential : *i) Doctoral degree in any area related to* Animal Health viz. Veterinary Pathology/Microbiology/Bacteriology/Virology/Parasitology/Epidemiology. ii) and iii) As in Item No.2(ii) and (iii) above. iv) Specialisation in disease diagnostics.

Desirable : Experience in Research Management Position.

JOINT DIRECTOR, PROJECT COORDINATOR, HEAD OF DIVISIONS AND HEAD REGIONAL STATION.

Pay Scale : Rs. 4500-7300

14. JOINT DIRECTOR CPR STATION, MODIPURAM UNDER CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA. (One Post)

Qualifications Essential : i) Doctoral degree in any branch of Horticulture Science or other allied disciplines. ii) Principal Scientist in the pay scale of (Rs. 4500-7300) or in an equivalent position. *OR 8 years experience as a Senior Scientist (Rs 3700-5700) or in* an equivalent position OR An eminent Scientist having proven record of scientific contribution working in a reputed organisation/Institute having against 13 years experience in the relevant subject. *iii) As in Item No. 2(iii) above. iv) Specialisation in the field of* Potato/Tuber Crops/Vegetable and experience in production/improvement of Potato.

15. JOINT DIRECTOR, (COMPUTER SCIENCE), INDIAN AGRICULTURE STATISTICS RESEARCH INSTITUTE, NEW DELHI. (One Post)

Qualifications Essential: i) Doctoral degree in any Computer *Science/Mathematics/Computer Applications/Statistics/Agricultural* Statistics or related disciplines ii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of research and teaching in Computer Applications

16. Project Coordinator (Sheep Breeding), Central Sheep and Wool Research Institute, Avikanagar (One Post)

Qualifications Essential : i) Doctoral degree in Animal Genetics and Breeding. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in Sheep Breeding and Management.

17. Project Coordinator (Biological Nitrogen Fixation), Indian Agricultural Research Institute, New Delhi. (One Post).

Qualifications Essential : i) Doctoral degree in Agricultural Microbiology/Soil Microbiology/Agricultural Botany with experience in investigation in Biological Nitrogen Fixation. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Experience in research in Biological Nitrogen and Fixation and to provide leadership in this area. Ability to coordinate, collect and preparation of reports for the Project from multilocation trials at different centres in the country.

CENTRAL INSTITUTE OF AGRICULTURAL ENGINEERING, BHOPAL

18. Head, Agricultural Mechanization Division. (One Post)

Qualifications Essential: i) Doctoral degree in Agricultural Engineering. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation in design and development of improved Agricultural Machinery for Crop Production and in Research Management.

INDIAN LAC RESEARCH INSTITUTE, RANCHI

19. Head, Transfer of Technology Division (One Post)

Qualifications Essential : i) Doctoral degree in Agriculture Extension or relevant subject. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and working experience in the field of Agriculture Extension work with particular reference to Lac Cultivation Management and Entrepreneur Development Programme.

CENTRAL SOIL AND WATER CONSERVATION RESEARCH AND TRAINING INSTITUTE, DEHRADUN

20. Head Regional Station Chandigarh under CS & WCR & TI, Dehradun (One Post)

Qualifications Essential : i) Doctoral degree in Soil Physics/ Soil and Water Conservation/Agronomy/Forestry/Horticulture/Soil Science/Soil Water Conversation Engineering. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and relevant experience in Soil and Water Conservation and Watershed Management. Knowledge in modern methods of techniques for irrigation in Watershed Management.

CENTRAL INSTITUTE FOR RESEARCH ON COTTON TECHNOLOGY, BOMBAY

21. Head, Quality Evaluation and Improvement Division (One Post)

Qualifications Essential: i) Doctoral degree in Physics/Textile Physics/Fibre Science/Fibre Technology/Bio-Physics. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience (a) Supervision of Physical testing of cotton (b) contribution in the development/standardisation of Test Methods/Instruments for Cotton Textiles.

22. Head, Chemical and Bio-Chemical Processing Division (One Post)

Qualifications Essential : i) Doctoral degree in Chemistry/Microbiology (Agricultural)/Bio-Chemistry (Plant). ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of Processing and finishing of Cotton Textiles/Cotton Seed/Agro and Industrial waste Utilisation.

23 Head, Mechanical Processing Division (One Post)

Qualifications Essential : i) Doctoral degree in Textile Technology/Textile Manufacture. ii) and iii) As in item No. 14(ii) and 2(iii) above. iv) Specialisation and experience in the field of Mechanical Processing of Cotton and Blended Textiles.

24. Head, Technology Transfer Division (One Post)

Qualifications Essential: i) Doctoral degree in Agricultural Engineering or Pure/Applied Sciences. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of *Mechanical harvesting and ginning of cotton and (b) contribution in* the development of machinery for post harvest processing of cotton.

DIRECTORATE OF WHEAT RESEARCH, KARNAL

25. Head, Crop Protection Division (One Post)

Qualifications Essential : i) Doctoral degree in the Plant Pathology/Mycology/Bacteriology. ii) and iii) As in Item No.14(ii) and 2(iii) *above. iv) Specialisation and experience in the field of wheat* diseases and related areas of research/teaching programme in the relevant field.

26. Head, Crop Improvement Division (One Post)

Qualifications Essential : i) Doctoral degree in Plant Breeding/

Genetics/Cytogenetics/Economic Botany. ii) and iii) As in Item No.14(ii) and 2(iii) above iv) Specialisation and experience in the field of wheat breeding and related areas of research.

27. Head, Resource Management Division (One Post)

Qualifications Essential: i) Doctoral degree in Agronomy/Soil Fertility. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of wheat agronomy, soil fertility and input management.

28. Officer-in-Charge (Quality) Bio-Chemistry (One Post)

Qualifications Essential: i) Doctorate in Cereal Chemistry/Chemistry/Bio-Chemistry/Agricultural Chemistry. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of wheat quality, product development and related areas of research.

29 Head, Regional Station Flowerdale, Shimla under DWR, Karnal (One Post)

Qualifications Essential: i) Doctoral degree in Plant Pathology/Mycology. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation in virulence analysis/genetics of resistance related to wheat.

INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI

30. Head, Entomology Division (One Post)

Qualifications Essential: i) Doctoral degree in Entomology/ Zoology/Agriculture based on Entomological Investigation of Agriculture importance. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience practical experience in IPM.

31. Head, Agronomy Division (One Post)

Qualifications Essential : i) Doctoral degree in Agronomy. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience of research/teaching/extension education in Agronomy.

32. Head, IARI Regional Station, Pune (One Post)

Qualifications Essential : i) Doctoral degree in Plant Pathology ii) and iii) As in Item No.14(ii) and 2(iii) above iv) Specialisation and experience in viral and/or mycoplasmal diseases particularly of fruits and vegetables.

CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD

33. Head, Crop Protection Division (One Post)

Qualifications Essential: i) Doctoral degree in Plant Pathology/ Entomology/Nematology. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in crop Protection of Plantation Crops.

NATIONAL INSTITUTE OF RESEARCH ON JUTE AND ALLIED FIBRE TECHNOLOGY, CALCUTTA

34. Head, Chemical & Bio-Chemical Processing Division (One Post)

Qualifications Essential : i) Doctoral degree in Chemical Technology/Bio-chemistry/Chemical Engineering/Chemistry. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the area of Natural Fibre Composite, Pulp and Paper from Agro-Fibres, Bio-technology on Jute/ allied fibre modification etc.

CENTRAL AVIAN RESEARCH INSTITUTE, IZATNAGAR (U.P.)

35. Head, Avian Physiology and Reproduction Division (One Post)

Qualifications Essential : i) Doctoral degree in Poultry science/ Animal Physiology with specialisation in Avian Physiology., ii) and iii) As in Item No.14(ii) and 2(iii) above. Specialisation and experience in the field of Avian Physiology and Reproduction.

36. Head, Avian Genetics and Breeding Division (One Post)

Qualifications Essential : i) Doctoral degree in Poultry Science/ Animal Genetics and Breeding with specialisation in Poultry Breeding. ii) and iii) As in Item No.14(ii) and 2(iii) above. iv) Specialisation and experience in the field of Poultry Genetics and Breeding.

PRINCIPAL SCIENTISTS

Pay Scale : Rs. 4500-7300

Age: Below 50 years (There will be no maximum age limits for the ICAR employees. Relaxation to SC/ST candidates may be given in accordance with the orders issued by Govt. of India from time to time)

NATIONAL ACADEMY OF AGRICULTURAL RESEARCH MANAGEMENT, HYDERABAD.

37. Principal Scientist (Agril Research Management) (One Post)

Qualifications Essential : i) Doctoral degree in any branch of Agriculture and allied subject. ii) 10 years experience excluding the period spent in obtaining the Ph.D degree (subject to a maximum of 3 years) in research/teaching/extension education provided 3 years experience is as a Senior Scientist (Rs. 3700-5700) or in an equivalent position. iii) As in Item No. 2(iii) above. iv) Specialisation in Agriculture Research Management.

38. Principal Scientist (Agril Statistics). (One Post)

Qualifications Essential: i) Doctoral degree in Agricultural Statistics. ii) and iii) As in Item No. 37 (ii) and 2(iii) above. iv) Specialisation : The candidate must have obtained at least 5 months advanced training or should have had research experience or experience of conducting training in one or more of the following areas:

Management of Agricultural Research, Educational Technology, Project Management, Educational Psychology, Organizational Behaviour, Human Resources Management, Education Administration, Management Information Systems and Training of Trainers

39. Principal Scientist (Rural Sociology) (One Post)

Qualifications Essential: i) Doctoral degree in any subject/discipline in Agriculture and allied sciences ii) and iii) As in Item No 37 (ii) and 2(iii) above. iv) As in Item No. 38 (iv) above.

40. Principal Scientist (Agril Extension) (One Post)

Qualifications Essential : i) Doctoral degree in Agricultural and allied sciences with specialisation in Extension ii) and iii) As in Item No.37(ii) and 2(iii) above. iv) As in Item No. 38 (iv) above

41. Principal Scientist (Education Psychology) (One post)

Qualifications Essential : i) Doctoral degree in any discipline in Agriculture and allied sciences. ii) and iii) As in Item No.37(ii) and 2(iii) above. iv) As in Item No.38 (iv) above.

42. Principal Scientist (Educational Technology) (One Post)

Qualifications Essential: i) Doctoral degree in any discipline in Agriculture and allied sciences. ii) and iii) As in Item No.37(ii) and 2(iii) above. iv) As in Item No.38 (iv) above.

43. Principal Scientist (Human Resources Management) (One Post)

Qualifications Essential: i) Doctoral degree in any branch of Agriculture and allied sciences. ii) and iii) As in Item No.37(ii) and 2(iii) above. iv) As in Item No.38 (iv) above.

44. Principal Scientist (Agricultural Economics) (One Post)

Qualifications Essential: i) Doctoral degree in Agricultural Economics. ii) and iii) As in item No.37(ii) and 2(iii) above. iv) As in item No. 36 (iv) above.

SENIOR SCIENTIST

Pay scale: Rs. 3700-5700

Age : Below 45 years (There will be no maximum age limits for the ICAR employees. Relaxation to SC/ST candidates may be given in accordance with the orders issued by Govt. of India from time to time)

NATIONAL CENTRE FOR AGRICULTURAL ECONOMICS AND POLICY RESEARCH, NEW DELHI.

45. Senior Scientist (Agricultural Economics) (Two Posts)

Qualifications Essential: i) Doctoral degree in Agricultural Economics/Economics ii) 5 years experience (excluding the period spent in obtaining the Ph.D. degree during service, subject to a maximum of 3 years) in research/ teaching/extension education as Scientist (2200-4000) Or in an equivalent position in the relevant subject. iii) As in item No.2(iii) above. iv) Specialisation and experience in Macroeconomics theory. Agricultural Development and Policy and Quantitative Economics

TECHNICAL INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

46. T-9 (Sr. Librarian) (One Post)

Pay Scale: Rs 3700-5700 **Age :** Below 50 years

Qualifications Essential: i) Bachelor's degree of a recognised university with Master's degree (M Lib.) in Library/ Information Science or (any equivalent degree or certificate conferred by any organisation which are approved by the Ministry of Education Govt of India like INSDOC) and DRTC or Master's degree of recognised university with Diploma or Degree (B Lib) in Library/ Information Science or any equivalent certificate if conferred by any organisation which are approved by the Ministry of Education, Govt. of India ii) Five Years experience for Diploma Holders

Desirable : i) Three years experience for Degree holders ii) Knowledge of one foreign language iii) Experience of working in University/Institute/Council or any other organisation of repute and iv) Science Degree.

INDIAN VETERINARY RESEARCH INSTITUTE, MUKTESWAR

47. T-7 (Engineer-in-Charge) (One Post)

Pay Scale : Rs. 3000-4500 **Age:** Below 45 years

Qualifications Essential: i) Three years Diploma/Bachelor's degree in Electrical or Mechanical Engineering. (Where the duration of Diploma course available in the country is only two years, the minimum qualification will be two years diploma instead of three years diploma). ii) Five years independent working experience in a reputed Govt. Department/organisation of maintenance of Electrical Mechanical Installations Plants and Laboratory Equipments

Desirable : Master's degree in the subject.

Important Note:

i) The candidates selected for appointment to the posts in Animal Science disciplines and possessing degree in Veterinary Science/ Veterinary Science and Animal Husbandry followed by Masters and Doctoral degree in the relevant discipline will also be entitled to non-practicing allowance as admissible under the rules from time to time subject to fulfilment of conditions of entitlement for the same as prescribed by the Council.

ii) The candidates who have already applied for the posts appearing at S.No. 17,21,22,23 and 24 in response to previous advertisement of ASRB must also send fresh application. The fee already paid by the candidates alongwith their earlier application will be adjusted. To facilitate this they are advised to indicate the particulars of the fee already paid in the relevant column of the application form.

iii) The posts appearing at S.No. 1 to 36 will be filled up on tenurial basis for a period of five years. However, retirement age for all scientific posts is 60 years.

CLOSING DATE FOR RECEIPT OF APPLICATION IN AGRICULTURAL SCIENTISTS RECRUITMENT BOARD IS **13.5.1997.** (For candidates from abroad and in the Andaman and Nicobar Islands Lakshadweep, Minicoy and Amindivi Island, States Union Territories in the North-Eastern Region, Ladakh division of J&K State, Sikkim, Pangi, Sub-division of Chamba, Lahul and Spiti, districts of Himachal Pradesh, last date will be **28.5.1997.**

GENERAL INSTRUCTIONS :

1 For application form, please write to the Secretary, Agricultural Scientists Recruitment Board, Krishi Anusandhan Bhavan, Pusa, New Delhi-12. Request for forms must specify Advertisement No.1/ 97, name of post and item no. and should be accompanied by self addressed unstamped envelope (23 x 10 cms size).

2. **Separate application with separate fee, separate No. objection certificate, separate vigilance clearance certificate is required for each post.**

3 Application form complete in all respects, should reach the office of the ASRB together with the application fee of Rs. 8/- (No fee for SC/ST candidates) in the form of crossed Indian Postal Order drawn in favour of the Secretary, Agricultural Scientists Recruitment Board by the closing date. Applications received after the closing date will not be entertained. In case a candidate anticipates delay in forwarding of his application through proper channel, he must send an advance copy of the application alongwith the fee which must reach this office on or before the closing date.

4 Candidates abroad may apply on plain paper and send their applications together with an International Postal Order/Bank Draft covering the application fee drawn in favour of the Secretary, Agricultural Scientists Recruitment Board so as to reach this office of ASRB by the closing date. In countries where regular commercial channels are not available, the candidates can deposit the application fee in local currency with the Indian Mission/Posts abroad, who in turn will issue an R.B.I. draft in favour of Secretary, Agricultural Scientists Recruitment Board, N. Delhi.

5. The prescribed Essential Qualifications are minimum and possessing of same does not entitle candidates to be called for interview Where the number of applicants is large, the Board may restrict the number of candidates for interview to a reasonable limit on the basis of qualifications and experience higher than the minimum prescribed in the advertisement.

6. If required, candidates must appear for personal interview.

7. Higher initial pay may be recommended by the ASRB for specially qualified and experienced candidates for all the posts.

8. For all Technical posts and other Non Scientific position a screening test may be conducted by the Board to be followed by an interview.

9. T.A. contribution will be admissible to those called for interview as per ICAR Rules.

10. Crucial date for determining the age limit for candidates will be the closing date for receipt of applications from candidates in India.

11 Canvassing in any form will disqualify a candidate.

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MINISTRY OF HUMAN RESOURCE DEVELOPMENT
(DEPARTMENT OF EDUCATION)
EXTERNAL SCHOLARSHIPS DIVISION

IRISH GOVERNMENT FELLOWSHIPS-1997

Applications are invited on plain paper in the prescribed format from Indian nationals for award of Irish Government Fellowship for 1997 as per details given below latest by 21st April, 1997 (21.4.97)

Post-graduate diploma/ Masters degree courses	**Qualifications**	**Course objectives**
a) Post-graduate degree in Hydrology (2 fellowships)	First Class Honours graduate either in Engineering or with a suitable combination of science subjects including at least two years of University Mathematics.	Training for personnel involved in water resources planning water supply, environmental monitoring and pollution control, flood forecasting and flood warning, and design of hydraulic structures.
b) M.Sc. (Agriculture) in Environmental Resource Management. (One fellowship)	First Class Bachelors Degree in Science or other subject related to Agriculture Science	Training in the development and Utilisation of natural resources. It is concerned with the rural regional resource planning and environmental protection.
ii) M.Cs Community Health (One fellowship)	First Class Bachelors Degree in the related subject field.	Suitable for Doctors, Administrators, Social workers and other Health professionals
iii) Diploma in Compensatory and Remedial Education (Two fellowships)	First Class B.Ed. degree with two years teaching experience as on 30.9.97	To equip the teacher with the necessary conceptual framework and the skill to identify learning difficulties and to plan effective programmes for pupils.
iv) M.Sc. Occupational Health and Ergonomics (One fellowship)	Honours degree in Engineering Science or other relevant disciplines.	To take on managerial responsibilities in area of Occupational Health and Hygiene within organisations or with a regulatory agency or consultancy.

Age: The candidate should be in the age group of 23 to 33 years as on 30.9.97.

Duration : One Academic year except iii) where it is 1½% years.

Date of commencement of Course: September/October, 1997.

Value & Passage Cost: These scholarships provide for the cost of travel from India to Ireland and back, all University fees and a living allowance for the duration of stay in Ireland. In addition smaller allowances for books, preperation of thesis, warm clothing etc are provided, as per the Irish Govt. Fellowship rules.

The following documents must be attached with the application:-

a) One recent passport size photograph of the candidate must be affixed on the prescribed application form
b) Attested copy of certificate certifying the date of birth of candidate.
c) Attested copies of all degrees/diplomas/certificates/marks sheets etc.
d) Sponsorship certificate from employer. However, advance application complete in all respects alongwith other required documents will be considered provisionally pending sponsorship by employers.
e) Candidates must indicate, on plain paper, their plan for employment on completion of this fellowship.

Note :

1) Candidates who have been abroad for study/specialisation training either on a scholarship/fellowship or on their own are eligible to apply if they have been in India for at least two consecutive years after their return from abroad.
2) Applications of candidates who are at present staying abroad, will not be considered.
3) Applications not on the prescribed format and without necessary documents/papers will not be considered.
4) Candidates should have adequate knowledge of India and the donor country.
5) Preference will be given to candidates who are in post rather then those who are involved in ongoing academic research.
6) Applications from suitable female candidates will be welcomed.
7) Application received after 21.04.97 will not be considered.
8) Application must be submitted alongwith copies of all required documents.
9) This Ministry does not supply Application Forms.
10) In case the candidates does not hear anything by 31.7.97 it may be presumed that he/she has not been selected for the award.
11) The decision of the Selection Committee with regard to selection or otherwise shall be final.
12) Canvassing in any form will disqualify a candidate. Application may be sent to the Secretary, Ministry of Human Resource Development, Department of Education, External Scholarships Division, A1/W3, Curzon Road Barracks, Kasturba Gandhi Marg, New Delhi-110001, latest by 21st April, 1997 (21.04.97).

PROFORMA FOR APPLICATION

1. Name of the Scholarship Scheme
2. Subject
3. Name of the Candidate (in Block letters) with full mailing address.
4. Date of Birth and the State to which the Candidate belongs.
5. Whether member of SC/ST (A certificate from the competent authority should be attached)

Recent passport size
photographs duly signed to be pasted here.
Without photograph application will
be considered incomplete

6. Academic record starting from High School/Higher Secondary (Attested/photostat copies of certificates to be attached.)

Name of the University/Board/ Institute	Examination(s)	Years of Passing	Division/class with position if any (in case no class is awarded and only grading is done the conversion formula may be mentioned)	Percentage of marks obtained and position if any	Subjects taken

7. Details of professional practical training and research experience specifying the period and number of papers published/ previous employment.
8. Nature of the present employment with name and date of appointment/designation and the name and address of the employer.
9. *Have you been abroad? If so give full particulars of the country visited and the period of stay. Also mention the date, month and* year of return to India (purpose of visit also to be indicated)
10. Proposed programme of study/research and training specifying the following:-
    - (i) The work at present engaged in; (ii) Nature and programme of study research/training desired; (500 words)
    - (a) *Title of Study/Research*
    - (b) Hypothesis/Objective of study
    - (c) Methodology (to be adopted)
    - (d) Institutions where such studies are being done
    - (e) Relevance of study in Indian academic context

Declaration

I certify that the foregoing information is correct and complete to the best of my knowledge and nothing has been concealed/ distorted. I understand that if at any time I am found to have concealed/distorted any material information my selection shall be liable to summary termination without notice and compensation

Place

Date

Signature of Candidate

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राष्ट्रीय अध्यापक शिक्षा परिषद्

National Council for Teacher Education

16, I.P. Estate, Mahatma Gandhi Marg, New Delhi-110 002.

FOR ATTENTION OF TEACHER TRAINING INSTITUTIONS AND STUDENTS OF SUCH INSTITUTIONS/COURSES

National Council for Teacher Education (NCTE) has been established by an Act of Parliament with a view to achieving planned and coordinated development of the teacher education system throughout the country as well as for the regulation and proper maintenance of norms and standards in the teacher education system. In consonance with its assigned constitutional responsibilities, the Council has prescribed norms and standards for courses for pre-service training of teachers for pre-primary, elementary and secondary schools.

The NCTE norms for secondary level teacher education course (B.Ed.) prescribe 210 working days for academic year with the following break up : Days for admission—10, Teaching days in the institution—150, Supervised practice teaching/other assignment days—40 and Examination days—10. Teacher education institutions/Departments of Education in Universities and other institutions offering B.Ed. courses are advised to strictly adhere to the provisions of NCTE norms and standards. It is brought to the notice of all concerned that non-observance of these norms may attract action as per the provisions of the NCTE Act.

MEMBER SECRETARY

davp 1263(13)96

CLASSIFIED ADVERTISEMENTS

UNIVERSITY OF MUMBAI

SPECIAL RECRUITMENT DRIVE FOR BACKWARD CLASSES

Applications are invited in the prescribed form for the following various posts reserved for the candidates belonging to Backward Classes viz. SC/ST/DT(A)/NT(B) in the University.

Sr. No.	Designation of the Post	Department/ Centre	No. of Posts	Post reserved for SC/ST/DT(A)/NT(B)
** 1.	Professor	Mathematics	1	1(SC)
**** 2.	Professor	Mathematics	1	1(ST)
*** 3.	Reader	Mathematics	1	1(SC)
4.	Professor of Physical Chemistry	Chemistry	1	1(SC)
*** 5.	Lecturer in Analytical Chemistry	Chemistry	1	1(SC)
*** 6.	Lecturer in Organic Chemistry	Chemistry	1	1(ST)
7.	Lecturer in Physical Chemistry	Chemistry	1	1(DT-A)
8.	Lecturer in Organic Chemistry	Chemistry	1	1(NT-B)
** 8-A.	Reader	Chemistry	1	1(SC)
**** 9.	Reader	Library Science	1	1(SC)
***** 10.	Lecturer	Library Science	1	1(SC)
** 11.	Reader	Centre for Central Eurasian Studies	1	1(SC)
** 12.	Reader in Politics	Civics & Politics	1	1(SC)
** 13.	Reader	Centre for African Studies	1	1(SC)
***** 14.	Reader	English	1	1(SC)
**** 15.	Lecturer	Sanskrit	1	1(SC)
**** 16.	Lecturer	Linguistics	1	1(SC)
** 17.	Lecturer	Physics	1	1(SC)
** 18.	Lecturer	Physics	1	1(DT-A)
** 19.	Lecturer	Physics	1	1(NT-B)
**** 20.	Lecturer	Philosophy	1	1(SC)
**** 21.	Lecturer	Geography	1	1(SC)

Note: ** Reserved post advertised for 2nd time *** Reserved post advertised for 3rd time **** Reserved post advertised for 4th time ***** Reserved post advertised for 5th time

Candidates belonging to the Scheduled Castes, Scheduled Tribes, Denotified Tribes and Nomadic Tribes so notified for *the State of Maharashtra will alone be considered* for the above posts.

The pay scales of the posts are as follows :-

Professor :- Rs. 4500-150-5700-200-7300,

Reader :- Rs. 3700-125-4950-150-5700,

Lecturer :- Rs. 2200-75-2800-100-4000.

In addition to pay, Dearness Allowance, House Rent Allowance and Compensatory Local Allowance will be paid according to the University rules. The posts carry the retirement benefits according to the existing rules of the University. Teachers of the University are permitted to take up outside work according to the University rules. The appointments to the posts will be made on probation for a period of two years.

The minimum qualifications prescribed for the posts are as under :-

Professor :

An eminent scholar with published work of high quality actively engaged in research with ten years of experience in postgraduate teaching and or research at the University/National level Institutions, including experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader :

Good academic record with a doctoral degree or equivalent published work. Candidates from outside the University system in addition shall also possess at least 55% marks or an equivalent grade at the Master's degree level.

Eight years experience of teaching and/or research including upto three years for research degrees and has made some mark in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation, design of new courses and curricula.

Lecturer :

Good academic record with at least 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from a foreign University.

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for Lecturers conducted by UGC, CSIR or similar test accredited by the UGC.

The candidate belonging to any one of the following categories are exempted from the requirement of clearing the Lectureship Eligibility Test provided they posses a minimum of 55% marks at Master's degree level :-

1. *Those who have passed the NET Examination conducted jointly by the CSIR-UGC for Junior Research Fellowship Award,*
2. Those who have passed M.Phil degree examination upto the 31st December 1993;
3. Those who have submitted Ph.D. thesis upto 31st December, 1993.

The additional Qualifications prescribed for the posts are as under :-

1. Professor (Mathematics):- Specialisation in any branch of Pure Mathematics, such as Algebra/Number Theory/Discrete Mathematics/Analysis including Different Equations/Different Geometry.

3. Reader (Mathematics):- Specialisation in any branch of Pure Mathematics, such as Algebra/Number Theory/Discrete Mathematics/Analysis including Differential Equation/Differential Geometry.

4. Professor of Physical Chemistry (Chemistry).- Must be scholars of eminence, must have to their credit research work of independent merit, must possess fairly long experience of teaching post-graduate classes and guiding advanced research in Physical Chemistry.

5. Lecturer in Analytical Chemistry (Chemistry).- Specialisation in Analytical Chemistry teaching experience at graduation and post-graduation level desirable.

6&8. Lecturer in Organic Chemistry (Chemistry)- Specialisation in Organic Chemistry.

7. Lecturer in Physical Chemistry (Chemistry) :-Specialisation in Physical Chemistry teaching experience of graduation and post-graduation level desirable.

8-A. Reader (Chemistry) Experience of teaching Analytical Chemistry. Research experience in area of inorganic Analysis including Instrumental Methods and/or Radio Analytical Chemistry.

11. Reader (Centre for Central Eurasian Studies):- Specialisation and Experience of teaching/research relating to Soviet Union/Socialist Societies with reference to any of the Social Science disciplines such as Economics, Political Science, History, Sociology, Geography, International Affairs and Area Studies. Diploma in Russian Language is required.

12. Reader in Politics (Civics & Politics):- Comparative politics including Political Analysis or Third World Studies or Political Theory.

13. Reader (Centre for African Studies) :- Political Economy of Africa/History of Africa in the Ninteenth and Twentieth centuries.

14. Reader (English) :- Good knowledge of British literature from 1550 to 1980. Teaching and research experience should be in two of the following fields:-

(a) British literature of any one or more of the following centuries: 16th, 17th, 18th, 19th, 20th.

(b) Forms of literature

(c) Literary theory and criticism and/or Aesthetics.

(d) American literature.

(e) Indian writing in English and in English translation.

(f) World literature in relation to in English literature.

(g) Ideological perspective on literature, such as Marxism, Psyche-Analysis, Post-colonialism, Geminism.

(h) Stylistics and literature teaching methodology.

15. Lecturer (Sanskrit) :- Sound knowledge of Veda and/or Vedanta.

16. Lecturer (Linguistics) :- Contemporary Linguistic Theory, Government, Binding, Generalized Phrase Structure Grammer, lexical Functional Grammer.

17. Lecturer (Physics) :- Solid State Physics.

18. Lecturer (Physics) :- Experimental Nuclear Physics.

19. Lecturer (Physics):- Theoretical Physics.

20. Lecturer (Philosophy):- Specialisation in Phenomenology and existentialism or Symbolic logic.

21. Lecturer (Geography) Specialisation in use of quantitative methods and Cartography.

Explanation :

(1) For determining "Good academic record" the following criteria shall be adopted:

(i) A candidate holding a Ph.D. degree should have at least a Second class Master's degree; or

(ii) A candidate without a Ph.D. degree should possess a high second class Master's degree and Second Class in the Bachelor's degree; or

(iii) A candidate not possessing a Ph.D. degree but possessing a Second Class Master's degree should have obtained First Class in the Bachelor's degree.

(2) Candidates having secured marks more than mid-point of the pre-

scribed minimum marks for passing an examination in the second class and the prescribed minimum marks for passing an examination in the first class by a University shall be deemed to have passed that examination in the high second class.

In the case of candidates belonging to Scheduled Castes, Scheduled Tribes, Denotified Tribes and Nomadic Tribes, the qualification regarding *experience is relaxable at the* discretion of the Vice-Chancellor on the recommendation of the Selection Committee.

In case the SC/ST candidates are not available, the University may take prior approval of the U.G.C. for relaxing the minimum requirements of 55% to 50% of marks at Master's degree level.

1. Post reserved for SC/ST/DT(A)/NT(B) will be filled in by candidates belonging to that particular category. *If no Candidate/s from the reserved category is/are available or found* suitable candidates from the open category will be appointed on temporary basis for one academic year only subject to the prior approval of the Government as mentioned in G.R. No. BCC-1094/CR-57/94/16-B, dated 5th December, 1994 and the candidate so appointed will have no right or claim on the said post if candidates from reserved category are available next year.
2. Reservation for women will be as per the directions issued by the Vice-Chancellor vide circular No.Estab.I/*271/1995, dated 29th June, 1995.*
3. Candidates belonging to reserved category should send two xerox copies of their application along with the attested copy of the caste certificate to the Deputy Registrar, B.C. Cell, University of Mumbai, Mumbai - 400 032.

Ten copies of the application in the prescribed form, together with attested copies of the certificates alongwith a crossed demand draft for a prescribed fee, should be sent in an envelope superscribed with "Application for the post________ so as to reach the Registrar, University of Mumbai (Teaching Appointments Unit) Room No.134, Fort, Mumbai-400 032, on or before **21st April, 1997.** Candidates who are already employed shall send their applications through proper channel. Application received after the last date fixed for the receipt of applications will not be accepted. The University shall not be responsible for any postal delay. Incomplete applications and applications on Plain paper will not be considered. Canvassing direct or indirect will be disqualification.

Prescribed forms of application can be had free of charge, from the Teaching Appointments Unit, Registrar's Office (Room No.134), University of Mumbai, Fort, Mumbai-400 032. Request for supply of a set of Ten prescribed forms by post should be made sufficiently in advance with a self addressed stamped (Rs. 6.00) envelope of the size 27x12 cms.

Candidates having knowledge of Marathi will be preferred.

Dr. Jairam Chavan

Date : 4th March, 1997. **REGISTRAR.**

PONDICHERRY VETERINARY

COLLEGE SOCIETY

RAJIV GANDHI COLLEGE OF VETERINARY AND ANIMAL SCIENCES

(Sponsored by the Government of Pondicherry, affiliated to Pondicherry University)

Kurumbapet, Muthirapalayam BPO
Pondicherry 605 009.

Advt.No.F.3-167/RAGACOVAS/Estt/96-97/2080 Dated 26.3.1997.

Applications in the prescribed form are invited for the following posts :

1. **Professors** :- ONE each in the disciplines of Livestock Production & Management (Except Avian), Veterinary Parasitology, Veterinary Pharmacology & Toxicology, Livestock Product Technology, Animal Reproduction Gynaecology & Obstetrics, Veterinary Surgery & Radiology, Clinical Veterinary medicine including Ethics & Jurisprudence, Veterinary Epidemiology & Preventive medicine on Rs. 4500-150-5700-200-7300 plus NPA Rs. 850/- and allowances as admissible under rules. (Total emoluments at the minimum of the scale is Rs.13,407/-)

   Qualifications: Ph.D. Degree with ten years experience in teaching/research/extension in the concerned subject.

   Age : Below 55 years.
2. **Associate Professors** :- ONE each in the disciplines of Veterinary Anatomy, Veterinary Biochemistry, Veterinary Philosophy, Veterinary Pathology, Veterinary Public Health, Veterinary Surgery & Radiology, Animal Reproduction Gynaecology and Obstetrics, Clinical Veterinary medicine, Ethics and Jurisprudence, Veterinary Epidemiology & Preventive medicine on Rs. 3700-125-4950-150-5700 plus NPA Rs. 850/- and other allowances as admissible under rules. (Total emoluments at the minimum of the scale is Rs.11,645/-)

   Qualifications : Ph.D. Degree with five years experience in teaching/research/extension in the concerned subject.

   Age : Below 45 years.
3. **Assistant Professors** :- Six posts in the disciplines of Veterinary Public Health (1), Veterinary Surgery & Radiology (1), Veterinary Epidemiology & Preventive medicine (1), Avian Production and Management (2), Veterinary Pathology (1) on Rs. 2200-75-2800-100-4000 plus NPA Rs. 600/- and other allowances as admissible under rules. (Total emoluments at the minimum of the scale is Rs. 8,232/-)

   Qualifications: Master Degree in the relevant subject with 55% of marks or its equivalent grade and good academic record.

   Age : Below 35 years

Note :

i) The posts of **Assistant Professor** are reserved for SC-3, ST-2 and OBC-1. However, in case suitable candidates in these categories are not available for selection, the posts will be filled up by candidates of general category by dereserving the current vacancies.

ii) For all posts, a basic Bachelor's Degree in Veterinary and Animal Science recognised by the Veterinary Council of India and registered with State/Central Veterinary Council is essential.

iii) Additional incentives such as advance increments maximum 3 increments), protection of pay are also available for well qualified and experienced candidates.

iv) Possession of minimum qualifications need not necessarily entitle a candidate to be called for interview. The Society reserves the right to short-list candidates for personal interview. No TA/DA shall be paid for attending personal interview.

v) Application forms and instructions to candidates can be had *free of cost* from the Dean, Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet, Muthirapalayam BPO, Pondicherry 605 009, either in person or by sending a requisition with self-addressed envelope (31 cm x 13 cm) bearing postage stamp to the value of Rs. 2/-.

vi) No postal requests for application forms will be entertained after 18.04.97. Filled in applications will be received till 5.00 P.M. on 30.04.97. Please superscribe the category of post applied for on the envelope. The college will bear no responsibility for postal delay.

vii) In case the last date fixed for issue/receipt of forms happens to be holiday(s) the last date may be deemed to have been extended upto the end of next working day.

Dr. R. Sabarinathan Nair
DEAN

ANNA UNIVERSITY

CHENNAI 600 025

SC/ST TEACHER TRAINING PROGRAMME

Advt. No.001/PR24/97-TT,
Dated. 18.03.1997

Applications are invited in the prescribed form, from candidates belonging to SC/ST for recruitment as TEACHER TRAINEES.

Qualification : B.E./B.Tech.,/B.Arch. with first Class or CCPA greater than 6.5.

Stipend : Rs. 2,000/- per month

Age Limit : Below 27 years as on 1.7.97

Training Period : 3 years

Area of Training : Civil/Mechanical/Electronics and Communication/Architecture/Electronics.

On successful completion of training and on acquiring Master's degree (part of training) with First Class or CCPA greater than 6.5, the trainees will be considered for direct appointment as Lecturer in the scales of pay of Rs. 2200-75-2800-100-4000.

Application forms and other details can be had on requisition accompanied by Demand Draft for Rs. 50/- (Rupees fifty only) dated not earlier than 2.4.97 in favour of the "Registrar, Anna University, Chennai-25" together with a stamped self-addressed envelope (Rs. 5/-) of size 22 cm x 10 cm.

Last date for the receipt of completed applications is 30.4.97.

(Note : For each area of training, separate application is needed)

REGISTRAR

SHIVAJI UNIVERSITY

KOLHAPUR

PHYSICS DEPARTMENT

Advertisement

Applications are invited for the following research position in the Department of Science & Technology (DST), New Delhi sponsored project entitled "Magneto Electric Effect in Ferrite Ferroelectric Composites."

Post : Junior Research Fellow (JRF), ONE. For a period of Three years.

Qualifications : M.Sc. (Physics) with min. 55% marks/eqv. grade. Preference will be given to the candidates who have passed NET/GATE examination.

Age : Not more than 30 years.

Relaxable by 5 years for reserved category candidates.

Pay Scale : Rs. 2500 + H.R.A. for first Two years & Rs. 2800+H.R.A. for Third year.

Interested candidates should send their applications on a plain paper along with Bio-Data & relevant certificates to Dr. S.A. Patil, Principal Investigator, Department of Physics, Shivaji University, Kolhapur-416 004, **within 30 days** from the date of the advertisement.

Dr. B.P. Sabale
Date : 20-3-1997 **REGISTRAR**

DNYANPRASSARAK MANDAL'S

VNS BANDEKAR COLLEGE OF COMMERCE

POST BOX NO.20, MAPUSA GOA - 403507

Applications are invited for the following posts for the year 97-98.

1.	**Physics**	**one post (F.T.)**
2.	**Computer Science/Awareness**	**three posts (2 F.T. & 1 P.T.)**
3.	**Accountancy**	**one post (F.T.)**
4.	**Economics**	**two posts (F.T.)**
5.	**English**	**one post (F.T.)**

These posts are advertised for the first time and are reserved for SC/ST candidates. *If suitable candidates from reserved category are not available* then the candidates from general category will be selected temporarily for one year.

Qualifications, pay scales and service conditions as prescribed by Goa University/Government.

Applications, clearly stating the sl. no. of the post applied for, giving full details of academic qualifications from SSC onwards, experience, caste etc, should reach the Principal **within 15 days** from the date of publication of this advertisement. *The persons employed shall send their applications through* proper channel. Break in service, if any, should be accounted for.

The posts will be filled in only if work load warrants.

R.D. Arsekar
PRINCIPAL

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

ADVERTISEMENT NO. 2/97

Applications are invited in the prescribed form to fill up the posts of Assistant Professors in the University (OUTSIDE THE MAIN CAMPUSES VIZ. VEPERY, NANDANAM, MADHAVARAM) :

No. of vacancies : 36

Sl. No.	Discipline	No. of Posts	Reservation if any
	FACULTY OF VETERINARY AND ANIMAL SCIENCES		
1.	Anatomy	2	OC, SC
2.	Animal Genetics and Breeding	2	SC, BC
3.	Animal Nutrition	1	SC
4.	Clinical Medicine and Therapeutics	1	SC
5.	Dairy Science	2	OC, SC
6.	Extension	2	SC, BC
7.	Livestock Production and Management	1	SC
8.	Microbiology	1	SC
9.	Obstetrics and Gynaecology	1	SC
10.	Parasitology	2	OC, SC
11.	Pathology	1	SC
12.	Pharmacology	3	OC, SC, BC
13.	Physiology and Biochemistry	2	OC, SC
14.	Poultry Science	1	SC
15.	Preventive Medicine	2	OC, SC
16.	Directorate of Clinics (Candidates with Masters degree in Clinical Subjects viz. Clinical Medicine and Therapeutics, Surgery, Obstetrics and Gynaecology and Clinics can apply)	3	SC, BC, OC
17.	Directorate of Centre for Animal Production Studies (Candidates with Masters degree in the subjects of Animal Genetics, Animal Nutrition, Dairy Science, Poultry Science, Meat Science and Technology and Livestock Production and Management can apply)	4	SC, BC, OC, MBC
18.	Directorate of Centre for Animal Health Studies (Candidates with Masters degree in the subjects of Parasitology, Veterinary Microbiology, Pathology and Preventive Medicine can apply)	1	SC
19.	Directorate of Extension Education (Common to all with MVSc or M.Sc. degree in any of the subjects of Veterinary/Basic Science Faculties)	1	SC
	BASIC SCIENCE FACULTY		
1.	Animal Husbandry Economics	1	OC
2.	Animal Husbandry Statistics	2	OC, SC

Scale of Pay : Rs. 2200-75-2800-100-4000

Qualification : (As prescribed in TANUVAS Regulations) :

Masters degree in the relevant subject with atleast 55% marks or its equivalent grade and good academic records. A minimum of OGPA of 3.50/4.00 or its equivalent is essential.

A Basic degree of B.V.Sc. recognised by this University is essential.

Passing of National Eligibility Test is mandatory.

Application form and Instructions to candidates can be had from the Registrar, Tamil Nadu Veterinary and Animal Sciences University, Chennai-7 by sending a CROSSED DEMAND DRAFT for Rs. 10/- drawn in favour of "The Finance Officer, Tamil Nadu Veterinary and Animal Sciences University, Chennai-7" at any Nationalised bank with self addressed envelope (31 x 13) bearing postage stamps to the value of Rs. 3/-. The Demand Draft should be dated not earlier than 1.4.97. Completed applications should reach the Registrar, Tamil Nadu Veterinary and Animal Sciences University, Chennai-7 **before 5.00 p.m. on 5.5.97.** The SC/ST candidates are exepmsed from payment of application fee on production of proper evidence. The candidates should specify in their application form "APPLICATION FOR THE POST OF ASSISTANT PROFESSOR". Candidates who are willing to serve the University for not less than a minimum period of three years need apply. The candidates selected for the posts of Assistant Professors by the University should execute a bond to serve the University for a minimum period of three years failing which he/she should pay a sum of Rs. 30,000/0 (Rupees thirty thousand only). The bond should be executed before joining duty.

Place : Chennai
Date : 26.3.97

V.D. Padmanaban
REGISTRAR

Nizam's Institute of Medical Sciences

(A University established under the State Act)
Punjagutta, Hyderabad - 500 082 .A.P.

EMPLOYMENT NOTIFICATION

The following addenda is issued to the Employment Notification No.6/2/97/A-5, appeared in the columns of this News paper.

6) **Assistant Professor in** Nephrology (Rs.3500-125-4500).

7) **Lecture in Gynaecology &** **Obstetrics** for College of Nursing (Rs.2200-100-400).

DIRECTOR
N.I.M.S.

WIDE REACH : 210/96-97

भारतीय विदेश व्यापार संस्थान
INDIAN INSTITUTE OF FOREIGN TRADE

invites applications for

(a) **ASSOCIATE PROFESSOR***
(Rs. 3700-5700)
with specialization in :-
- (i) International Marketing
- (ii) International Finance
- (iii) Corporate Strategy and Business Policy
- (iv) Trade Logistics
- (v) International Trade Policy

(b) **ASSISTANT PROFESSOR**
(Rs.2200-4000)
(One--reserved for SC)

(c) **COMPUTER PROGRAMMER**
(Rs.2200-4000)
(One--reserved for SC)

(d) **RESEARCH OFFICER**
(Rs. 2000-3500)
(Two--one each reserved for SC/ST)

**Other things being equal, preference will be given to SC/ST/OBC candidates.*

Age - *For Computer Programmer and Research Officer 35 years and for other positions preferably not exceeding 50 years.*

QUALIFICATIONS :

Associate Professor : *Good academic record with a Doctoral degree or equivalent published* work. Candidates from outside the university system, in addition, shall also possess atleast 55% marks or an equivalent grade at the Master's degree level.

Eight years experience of teaching and/or research including upto 3 years for research degree and has made some mark in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation, design of new courses and curricula.

Assistant Professor : Good academic record with atleast 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from a foreign university. Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers, conducted by UGC or similar test accredited by the UGC.

Panel for Jr. Fellow : Institute also proposes to induct Jr. Fellows in the areas as at (a) above at a consolidated fee of Rs. 8,000/- p.m. all inclusive for short-term assignments with the same qualifications prescribed for Assistant Professor.

Computer Programmer : (a) MCA/BE (Computer Science)/B.Tech. (Computer Science) with First Class or atleast 60% marks or equivalent, or

(b) Master's degree in Maths/Statistics/Operations Research/Economics with Post Graduate Diploma in Computer Science (from a Government recognised Institution/University). The Master's Degree & Post Graduate Diploma should be with First Class or atleast 60% marks in aggregate or equivalent grade. Systems Analysis and Programming experience of one year.

Research Officer : (i) Atleast 2nd class Master's degree in Economics/Commerce/Statistics/Business Administration/M.Sc. (Operations Research).

(ii) Atleast 3 years experience of conducting research/teaching in Economics and allied fields.

Selected candidates may be inducted on contract/deputation for a period of 1 to 3 years in regular pay scales with usual allowances or on a negotiable consolidated amount.

Institute reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant or it may fill up the advertised positions at lower levels.

Applications with CV with full details about age, qualifications, specialisation, research and teaching experiences, publications, etc., should reach the Director (Admn. & Fin.), **INDIAN INSTITUTE OF FOREIGN TRADE**, IIFT Bhawan, Qutab Institutional Area, New Delhi - 110016 within fifteen days from the date of this advertisement.

IIFT - Where excellence is a way of life

FULBRIGHT FELLOWSHIPS

The U.S. Educational Foundation in India

Announces Fulbright Fellowships *for the Academic Year 1998-99*

1) **Post Doctoral Research Fellowships** - for Faculty in Social Sciences and Humanities. *Age: 50 yrs.*

2) **Post-Doctoral Travel-Only and Fulbright-Tata Travel Fellowships** - for academics and professionals who have invitations and financial support for academic/professional assignments (**not conferences/seminars/courses, etc.**) in the U.S. for 2-12 months, not earlier than May 1998. *Age: 50 yrs.*

3) **Visiting Lecturer Grants** - for Faculty in Social Sciences and Humanities. *Age : 50 yrs.*

4) **Pre-Doctoral Study Fellowships** - for scholars registered for Ph.D. degree at an Indian University in American Studies or Intellectual Property Rights. *Age : 45 yrs.*

5) **Hubert H. Humphrey Fellowships** - *for study and training for mid-level policy planners* and administrators in the government, public and private sectors, and NGO's. Additional fellowships in Drug Abuse Prevention may be offered to medical practitioners (M.D.) and behavioural scientists (Ph.D.). *Age : 40 yrs.*

6) **Professional Fellowships in Information Science & Technology** - for Librarians/ Asst. Librarians/Documentation Officers. *Age : 45 Yrs.*

7) **Professional Fellowships in Communication Technology** - for professionals working with *Film/TV/Video production units of educational institutions or national/regional* telecasting networks. *Age: 45 Yrs.*

8) **Fulbright-CII Fellowships for Leadership in Management** - for mid-level managers, whose employers will be willing to pay 80% of the total cost. For application forms contact: Senior Adviser (SDCA Division), Confederation of Indian Industry, India Habitat Centre, 4th Floor, Zone IV, New Delhi-110003. *Age : 40 Yrs.*

Requests (*stating qualifications, date of birth and present position*) for further details and application forms (**for all except No. 8 above**) may be sent to the USEFI office in your region, along with a self-addressed and stamped (Rs. 4.00) 10" x 7" envelope.

For Northern and Western Regions : USEFI, 12 Hailey Road, New Delhi-110 001; For **Eastern Region**: USEFI Regional Office, The American Center, 38A, Jawaharlal Nehru Road, Calcutta-700 071; For **Southern Region**: USEFI Regional Office, American Consulate Building, Anna Salai, Chennai-600 006.

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University News

A WEEKLY JOURNAL OF HIGHER EDUCATION Vol 35 No 15 APRIL 14, 1997 Rs 9.00

ABDUL RASHID & MOHD AMIN

RECs and Technical Education

R. KANAGASABAPATHY & K. ALWAR

Student Services

M. ALTAF KHAN & KAMAL YADAV

Management Education in India
— Emerging Issues

DHANESWAR HARICHANDAN

Teacher Education in Maharashtra

MANMOHAN SINGH

Education for Empowerment
— Convocation Address

PG DIPLOMA IN WOMEN'S STUDIES

INDO-U.K. PARTNERSHIP IN EDUCATION

TEACHER FELLOWSHIPS FOR LOKSHALA PROGRAMME

Association of Indian Universities

COLLEGE OF NURSING

POST GRADUATE INSTITUTE OF MEDICAL EDUCATION & RESEARCH, CHANDIGARH

ADMISSION NOTICE

LAST DATE FOR RECEIPT OF APPLICATION FORMS : **15.5.1997** (Upto 1.30PM)

Applications, on prescribed form, are invited for the following nursing courses starting from 16.7.1997

Sr. No.	Name of the Course and Duration	Total Seats	Seats reserved for SC	Seats reserved for ST	Seats reserved for P.G.I. staff
1.	B.Sc. Nursing (4 years)	50	7	4	-
2.	B.Sc. Nursing (Post-Basic) 2 years	40	5	2	9
3	M.Sc. Nursing 2 years i) Medical Surg. Nsg. & ii) Comm. H. Nursing.	8	(1 by rotation)		3

ADMISSION QUALIFICATIONS

For Course No. 1

10+2 examination passed of the Panjab University with Physics, Chemistry, Biology and English or any *other examination recognised by the Panjab University* as equivalent thereto. Candidates appearing in the said examination to be held in April/May, 1997 can also apply but they will be issued Admit Card only after furnishing the proof of their having passed the examination by 10.6.1997

For Course No. 2

(a) 10+2 passed under 10+2+3 scheme of education OR any *other examination recognised by* the Panjab University as equivalent thereto.

(b) 'A' Grade Registered Nurse and Midwife or substitute registration in case of male candidates

(c) Three years experience in bed-side OR Public Health Nursing (excluding midwifery training period) by 30.6.1997.

For Course No. 3

(a) B.Sc. Nursing (Post-Basic) OR B.Sc. Nursing degree of the Panjab University OR any other degree recognised by the Panjab University as equivalent thereto with atleast 50% marks in aggregate.

(b) Should have atleast 2 years experience by 30th June, 1997 in bed-side nursing or Public Health Nursing or nursing educational institutions (ex*cluding the experience gained during the* course of studies for various nursing courses).

(c) Registered Nurse and Registered midwife or substitute registration in case of male candidates qualified for nursing of men, women and children.

AGE LIMITS

For Course No. 1

Not less than 17 years and not more than 25 years as on 31.12.1997

STIPEND ADMISSIBLE

For Course No. 1

Selected candidates will be granted stipend at the rate of Rs. 100/- P.M. for three years and Rs. 200/- P.M. during the fourth year. They will have to execute service bond which, interalia, provides that they will serve the Institute/Government for a period of three years after successful completion of the course.

GENERAL INFORMATION

(a) Candidates will have to appear in the entrance test at Chandigarh at their own expense.

(b) Interim enquiries will not be entertained.

(c) Those applying for the reserved seats must append with their applications a certificate form the Distt. Magistrate/Tehsildar/Distt. Welfare Officer concerned in support of their claim. No other certificate will be entertained.

(d) The number of seats mentioned above is subject to variation without prior notice.

Application form and detailed information are available from office of the Principal either personally on payment of Rs. 150/- at the counter on all working days between 10.00 A.M. to 4.00 P.M. from Monday to Friday and from 10.00 A.M. to 12.00 Noon on Saturdays or by post on written request accompanied with self addressed envelope of 23 cms x 15 cms size with postage stamps of Rs. 12/- affixed thereon and a Demand Draft for Rs. 150/- drawn in favour of the "Director, P.G.I., Chandigarh."

The Prospectus will be available w.e.f. 9th April, 1997.

Dr. (Mrs.) Indrajit Walia
Acting Principal
College of Nursing

UNIVERSITY NEWS

VOL. 35 APRIL 14
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A Weekly Journal of Higher Education published by the Association of Indian Universities

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Opinions expressed in the articles are those of the contributors and do not necessarily reflect the policies of the Association.

Editor :
SUTINDER SINGH

RECs and Technical Education

Abdul Rashid*
Mohd Amin**

Introduction

Engineering education has made great strides in India since independence. In addition to the traditional university based engineering institutions, Government of India has established institutions exclusively for professional education in different fields of engineering.

The early planners rightly realised that the development of human resources in the form of properly trained scientists and engineers was the most essential pre-requisite for sustained industrialization. The result was establishment of Regional Engineering Colleges (RECs) which were started to meet the requirements of technical personnel in different areas of engineering and they were to function on an all India basis. All these colleges are affiliated to the universities nearest to the college campuses. Massive industrialization led to massive expansion of technical education in India upto the highest levels i.e. the establishment of Indian Institutes of Technology (IITs), technical universities and large number of degree level engineering colleges and polytechnics. It is a great tribute to the Indian experiment in development through science and technology that India now boasts of third largest scientific and technical manpower in the whole world.

Growth of Technical Education in India

Our First Five Year Plan focused mainly on agriculture. From the second Five Year Plan and onwards, more emphasis was laid on industrialization. The Engineering Personnel Committee (EPC) of the Planning Commission estimated in 1955 that by 1960-61 there would be a shortage of engineering graduates and diploma holders to the extent of 1800 and 8000, respectively. Thus the expansion of existing technical institutions and establishment of new ones was urgent, since continuing emphasis on industrialization in subsequent Five Year Plans would have made the shortage of technical personnel even more acute. Starting from the second Five Year Plan (1956-61), therefore, considerable investments (both physical and financial) were made by the central and state governments and even private agencies to develop the available human resource potential through the expansion of technical education for the growth of national economy. In the succeeding five year plans greater emphasis was laid on the qualitative improvement of technical education in the country through the progressive development of infrastructural facilities.

In 1950, there were only 33 institutions in the country offering technical education at the degree level and above, with an enrolment capacity of about 17,000. In 1987, however, facilities for technical education existed at 225 institutions, with an enrolment capacity of around 182,000 at the degree level and above. In 1950, there were hardly any facilities in the country for postgraduate studies in engi-

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** Librarian, ** Sr. Asstt. Librarian,*
Regional Engg. College, Srinagar-190 006.

neering. By 1987, however, such facilities were available in about 80 institutions, with an annual intake capacity of more than 6,000.

The Origin of RECs

Based on a review of the recommendations of EPC, the need to ensure equal opportunities for training all over the country and the requirements of future five year plans, the Government of India decided to set up, starting from the academic year 1958, a network of Regional Engineering Colleges. Although the initial decision was to set up eight colleges, two in each of the four regions, subsequently it was decided to establish one regional engineering college in each of the major States. Thus, between 1959 and 1964, 14 Regional Engineering Colleges were established.

With the addition of three more Regional Engineering College at Silchar in Assam, Hamirpur in Himachal Pradesh and Jalandhar in Punjab, today there are 17 Regional Engineering Colleges in the country.

These colleges were intended to have an all India character and to serve the whole country. This was ensured by each college admitting students from all other states and union territories and by appointing the best available faculty on all India basis, solely on consideration of merit.

Aims and Objectives of RECs

The original aim in establishing the RECs was to create a network of autonomous, efficient and high quality residential institutions of an all India character throughout the country, intended to serve the whole country, for providing undergraduate education and training in different branches of engineering with a view to supplying the engineering manpower needed for various projects envisaged under the successive five year plans. Although the aim was originally identified in broad terms as above, it is abundantly clear that these colleges were established with the intention of substantial future expansion in terms of courses and programmes offered, research work undertaken, etc. Thus the state governments were requested to provide land of approximately 250 acres with the suggestion to acquire additional land for future development of the institutions. The emphasis given to research from the very inception of the colleges is clear from the following statement contained in the original *Note on the Establishment of Regional Engineering Colleges:*

> *"The list of equipments should not only include these items which are essential for immediate instructional purposes of undergraduate courses but also some standard equipment for research work of the staff in various fields. The colleges should encourage the staff from the very beginning to do research or carry out advanced studies in their respective fields. That is the only way in which work of high quality may be ensured at the colleges which will reflect on the quality of graduates produced by the institutions".*

Development of postgraduate studies was also part of the long term objective of the establishment of the colleges. Thus the *Note* prepared in the late 1950's detailed that

> *"In the first phase, efforts should be concentrated on the construction of essential buildings, acquisition of minimum amount of equipment and recruitment of the necessary staff for conducting the first degree courses on satisfactory lines. In the second phase, facilities should be developed at the institutions for advanced work in selected fields depending upon the availability of staff".* The early aims and objectives of the RECs have been further redefined in the 1974 report of the reviewing committee of RECs *(Jaikrishna Committee)".*

Although these aims and objectives are broadly valid even today, all RECs have attempted periodically to review, redefine and reorient their goals and priorities in tune with the national policies and the changing educational, technological, industrial and economic scenario. The most recent of such exercises was made while preparing (1) the Programme of Action (POA) document (1988) following up on National Policy on Education (NPE-86) and (2) the perspective plan for creation of excellence in RECs (Nov.1992). In line with these documents, the present aims and objectives of RECs can be summarized as follows :

i. To offer courses of instruction in different branches of engineering at undergraduate, postgraduate and advanced study levels with a view to developing in the student technical excellence, social responsibility and an integrated personality and to assist in their placement in industry;

ii. To assess and update the curriculum content and the educational process continually and revise the programmes and schemes based on the realistic needs of the country and the engineering technological development;

iii. To make the instruction, training and programmes oriented towards and relevant to meeting the changing technological, industrial and socio-economic short term and long term needs of the country;

iv. To assist the industry in facing emerging challenges by providing appropriately trained technical personnel; retraining facilities for working professionals; research, development, design, testing, consultancy and extension services; technology updating, transfer and forecasting services, etc;

v. To undertake research, both fundamental and applied, in science and technology and on educational issues; to develop products/processes and to facilitate commercial utilization of such R & D output;

vi. To foster and maintain linkages with industry, R & D laboratories, other institutions and professional bodies with objective of mutual assistance, exchange/sharing of human and material resources, avoiding duplication of research efforts and to function overall in a mutually supporting and complementary manner;

vii. To achieve a vibrant and dynamic academic set up, promoting innovation, creativity and experimentation, adopting new tools, methods, systems and avenues such as flexible programmes with modular courses on credit system, lateral/multiple entry, new delivery modes, non-formal programmes, academic autonomy/deemed university status, learning resources development, faculty training and development programmes, etc,

viii. To maintain an all India character with regard to student admissions and faculty appointments to act as an important link in the interaction between central and state sectors of technical education and to promote national integration;

ix. To generate internal resources and improve cost-effectiveness in order to facilitate progress and development of the institution without financial constraints and over-dependence on government grants;

x. To function as pace setters for the maintenance of high standards and to provide leadership and direction to the technical institutions at the state level;

xi. To interact and cooperate with non governmental social organisations, the media and the community in socially responsible activities such as energy conservation, environmental protection, water management, consumer protection, etc; and

xii. To provide extension services such as entrepreneurship development employment generation, rural development, transfer of rural/appropriate technology, etc.

It can be seen that over the years the aims and objectives of RECs have been considerably broadened and that presently they cover the entire spectrum of activities of a higher technical education.

Special Features of REC System

Amongst the technical education institutions, the REC system has a unique character with exceptional opportunities and possibilities. As coherent, interactive and reasonably sized systems, they can absorb changes speedily and effectively. Being closely administered by, and having direct link with Ministry of Human Resource Development (MHRD), they can implement policy changes introduced by Government of India without hindrance. Their all India character and geographic distribution enable changes to be effected throughout the country. Since the vast majority of REC graduates stay and work in India, innovations effected in RECs have a direct impact on Indian economy. With very close interaction amongst them, with the Ministry of Human Resource Development and with the respective state governments, their developments can be coordinated and integrated keeping in perspective the overall needs of the whole country in general and of the respective regions in particular. Their pacesetter role facilitates the gradual spreading of the innovations and development pioneered by RECs to other institutions in the region. The stay of students from all over India in a residential campus facilitates cultural-cross fertilization as well as inter regional transfer of appropriate rural technology and applications. Thus the RECs have a natural advantage in effecting far reaching changes in the technical education scene to benefit the whole country.

Present Position

The initial broad objectives in the establishment of RECs have been satisfactorily met long ago. Thus the Jaikrishna Committee, acknowledged as early as 1974 that the RECs have attempted to maintain higher standards in technical education and have also served as catalysts for state institutions in this regard and further have helped in promoting national integration. Several studies since then have shown that the REC system has contributed significantly to the industrial development of the country. It is also recognized at national level that their contribution is very high considering the investment made in them, in comparison with other higher technological institutions.

The RECs have come a long way in progressing beyond their original goals and in meeting continually expanded goals and objectives. Today they all offer postgraduate programmes at M.Tech level and many also offer doctoral programmes. A few of them have been declared as QIP centers for training engineering faculty at M.Tech/Ph.D. levels.

In academic administration, 3 RECs have been given academic autonomy. The applications for grant of "Deemed to be University" status of 3 other colleges are under process by All India Council for Technical Education (AICTE) and several more such applications are in the pipeline.

All RECs have taken up substantial R & D works the funding coming mostly from industry, Ministry of Human Resource Development and national organisations such as AR & DS, DRDO, CSIR, DST, UGC, etc. They all have Training and Placement Departments each headed by a full time professor. A significant proportion of students gets placement in Industry-Institute Linkage Cell (IILC), headed by a full time professor to coordinate sponsored research, exchange of personnel, continuing education of working professionals and consultancy services. Most RECs have Entrepreneurship Development Cells (EDC) and a few have STEPs. These units also cater to the needs of other technical institutions in the region. These cells also look after training and employment generation schemes such as TRYSEM, MEGSAT, implementation of Entrepreneurship incentive scheme, etc in the respective states. The RECs have entered into MoUs with CII at both national and regional levels for large scale and multi-faceted interaction.

Financially, today in aggregate terms about 80% of the fundings of RECs flow from Government of India. During the 6th, 7th, 8th, plan periods, substantial financial support was given to RECs under the Direct Central Assistance Schemes for (i) Modernisation and removal of obsolescence, (ii) Thrust areas of technical education, (iii) Areas of emerging technology, (iv) IIT- REC network scheme, and (v) Research and Development in institutions.

As a sequel to the NPE-86, all RECs prepared in 1986 (revised in 1988) Programmes of Action (POA) for their growth and development during 8th plan and beyond. More recently at the instance of the Planning Commission, a detailed document '*Perspective for Excellence in Regional Engineering Colleges*' was prepared for all RECs and submitted to the Government of India by the Planning Commission. In approval of the suggestions contained in this document, the Government of India has already sanctioned special grants of Rs 4 crores each for RECs to be released at Rs 1 crore per year. From 1993-94 it has already been disbursed to the institutions. These special grants are to be utilized towards development of excellence in RECs.

Conclusion

Over the last three decades, almost all the RECs have emerged as premier technical institutions and contributed significantly to national growth by imparting high quality technical education, promoting research, facilitating consultancy work and providing extension services. The RECs are currently engaged in the process of redirecting their efforts towards the socio-economic development of the country.

The possibilities inherent in the scheme of establishment of RECs conceived more than 30 years ago, still remain to be realised fully for results commensurate with huge investments. The scheme can yield further results if certain structural changes are made in respect of administrative procedures, in developing industry-oriented courses, in the methods of financing, in bringing innovative approach to technical education, and in the technical education policy itself. If these changes are made, the Regional Engineering Colleges will truly become the catalysts for national development.

References

1. *Note on the establishment of RECs.* Appendix to Govt. of India letter No. F.16-3/60 T.5 dated 18th May 1961.
2. *Report of the Reviewing Committee of the RECs.* Ministry of Education and Social Welfare, Govt. of India, New Delhi. Feb. 1974 (Dr. Jaikrishna Committee Report).
3. Ministry of Scientific Research and Cultural Affairs, Govt. of India (1956). *Report on the Further Expansion of Technical Education in the Second Five Year Plan.*
4. Ministry of Scientific Research and Cultural Affairs, Govt. of India (1961): *Report of the Committee on Post-Graduate Engineering Education and Research.*
5. Gupta, S.P. (1979) : *Modern India Progress in Science and Technology.* Vikas Publishing House, New Delhi.

STUDENT SERVICES

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Student services deserve to claim priority of attention in the human resources development of the youth in colleges. The classroom activities in the colleges are purported to develop only the intellectual side of the students. Nevertheless the physical, emotional and social development of the students should supplement the intellectual pursuits to make each student who is stepping out of the portals of a college a fully developed rounded personality. All such activities that promote the fuller development of the students and are organised outside the class and off the class hours are generally called student services.

Scope

The scope of student service is wide and ever-increasing with reference to the individual environs of the college which organises them. Normally the following are included in the list of student services in a college : Orientation, Advising, Counselling, Vocational Guidance, Remedial Services, Campus Publications, Health Service, Financial Aid, Hobbies, etc. Residential facilities, Library Service, Physical Education, National Cadet Corps, National Service Scheme, etc are important student services too. Nevertheless they are not generally dealt with under the head 'Student Services' under Indian conditions because they function as well-organised separate departments/units in the college. At the same time it should be kept in mind that every college should have its own list of student services to cater to the needs and aspirations of the students in consonance with the cultural ethos of the college. From time to time in the light of reviews and analysis, colleges should develop and add new services or may drop some services which tend to be irrelevant. In this respect imagination is the need and sky is the limit.

Evolution

Student services in some from or the other have been carried on in colleges in India from very early times. Still the concept of 'student services' in an organised form was introduced in the Indian higher education system only in the early seventies by the United States Educational Foundation in India (USEFI). They conducted a number of seminars and courses and brought out a number of publications. Their pioneering work "Selected Readings in Student Services for Indian Universities and Colleges", edited by Clyde A. Parker (1973) serves as a valuable guide-book for those who are interested in student services.

The present authors have had long experience in an Arts and Science College located in a rural backward area. Based on their experience and experimentation during their tenure they share in these columns their thoughts on some of the student services implemented at the college level.

1. Orientation Programme

Orientation is one of the most effective student services to be offered to the new entrants to the college commencing at the start of the academic Year. The main focus of this programme is on making the newly-admitted I year degree student to adapt himself to the totally changed situation of the college.

Generally students pursue their studies upto their higher secondary school staying with their parents and attending schools nearer their homes or in the vicinity of their villages. They move with the same class-mates from the lower classes to the Pre-degree class and associate themselves with the same pals from their neighbourhood.

However, when a Pre-degree student enters the college campus he feels like a chick that has broken its shell and looks at the open world with eyes bulging out in wonder. He has to face a new series of adjustment problems. Orientation is like a gear-shift lever that will enable smooth running of the college course for these students.

Aims of Orientation

The following are the aims of an Orientation Programme :

1. To make the new students feel familiar with the

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physical and other facilities available in the college and the expectations of the institution.

2. Prepare the young scholars for the experiences, which they are expected to encounter, during the course of their college life.
3. To help the new entrants overcome their shy and timid nature.
4. To enable them to understand the new conditions, practices and standards prevailing on the campus.
5. To encourage them to be more effective in their academic pursuits and to turn them out to be responsible members of the society.
6. To assist them to take full advantage of the educational facilities offered to them.
7. To keep them in constant touch with the study habits, financial assistance and the co-curricular activities and so on.
8. To provide them with a launching pad to get off to a flying start in the college and a safe landing on a career in their post-college life.

Orientation — a continuous process

A newly admitted college student looks forward to the first day of his college life with mixed feelings of anxiety, misgivings and thrill. However the new and unfamiliar experiences cannot be limited to a first few days of college course alone. Consequently we should recognise that the orientation programme is not one-day programme (confined to the first day of the academic year in the college) but a continuous process spanning the full length of the course chosen by the student.

Need for Planning

The 'first-degree course' is the period when noble ideas and higher values are embossed on the impressionable minds of the students at the adolescent stage. So a well thought out orientation programme spread throughout the year to fulfil the needs and aspirations of the students belonging to a rural backward areas was prepared in the college after much discussion with the Heads of Departments and other members of the faculty specially interested in student services. Great care was taken in preparing the content of each orientation with particular reference to the needs of the students and their ability to receive the message conveyed. For example, the contents of the first day orientation programme were planned keeping in mind the essentials to be told on the first day as also the capacity of the mind of the new entrants to receive the same in the first day situation.

Similarly another orientation was given after one week bearing in mind the fact that students would be more calm by then and would be able to receive more information.

In this way about twelve orientation programmes (on an average 2 per semester) were prepared e.g. one before the first university examination, one before the College Day, one before the end of the year, etc. Information in each of the orientation programmes was passed on at the appropriate time and in such a way that students took them seriously and to their benefit.

A Model

Normally the first day orientation will be as follows :

10.00 to 11.00 a.m. - The Adviser (a teacher) talks to the students (of the I year Major Class)

11.00 to 11.30 a.m. - The Head of the Department addresses the students.

11.30 to 11.45 a.m. - The Principal addresses all the students of the I Year degree classes.

11.45 to 12.30 p.m. - Video film on the College (showing glimpses of the college infrastructure, College Day, Convocation, etc so that the student will develop a sense of pride in his college) is shown.

12.30 to 1.00 p.m. - Guided campus visit is arranged. (Humanities students spend more time in the laboratories since they may not have the opportunity to visit them later.)

Even as the orientation for the students is carried on in the halls allotted for each of the I Year Major Classes the Principal addresses the parents in the Central Hall between 10.00 a.m. and 10.30 a.m. and the parents also see the video film from 11.30 a.m. to 12.15 p.m.

Points to be conveyed by the Adviser, Head of the Department and the Principal are well planned in advance so that there is no unnecessary repetition. However, certain points which are considered very essential are repeated for the sake of emphasis.

Eradication of Ragging

The involvement of the senior students of the college in the implementation of the Orientation Programme is quite significant. They are chosen by the Adviser and their roles are clearly explained to them before the Orientation day. On the first day of the academic year when the junior students start arriving at the college, the senior students welcome them, guide them to their various classes and take them round the college during campus visit. They help the junior students and the teachers in conducting the first orientation programme successfully.

The beneficient outcome of this arrangement is the generation of the feeling of goodwill and confidence among the students accounting for campus peace and happiness. The senior students treat the junior students with concern showing them a genial and helping spirit. The junior students look up to their seniors with regard and thankfulness. They feel quite at ease in the caring company of the seniors. Hence there is mutual trust and a tension-free and relaxed atmosphere conducive to the progress of the junior students is created. In these circumstances there is no room, whatsoever, for the nefarious practice of ragging that is swamping colleges leading to fear psychosis amongst junior students and cases of dropouts, fracas or even fatal ends in extreme cases. In the college where the authors implemented the Orientation programme so successfully, ragging was unheard of on the campus and a healthy tradition of hospitality and friendliness has been built on a very sure foundation. One of the ways of eradicating the malaise of ragging can be found in a scheme of planned orientation for the students.

Long years of experience have convinced the authors of the efficacy of the programme especially in creating a good relationship between the teachers and students, between seniors and juniors and in creating a sense of responsibility, discipline and dignity among the students.

II. Advising

Student Advising or Student Advisory System is counted very significant among the organised student services offered in the college. It fits admirably into the system of student orientation programme which has been perceived as a continuous process.

Basis of Advising

The implementation of the Student Advisory Scheme envisages the development of rapport between the Adviser (the teacher) and his wards (the students, say, of a degree class) committed to his care. Its essence is the close personal relationship and interaction between the adviser and the students which build up the student's confidence in the teacher to approach him freely for any clarification or guidance for his academic betterment or for the resolution of his problems. It develops a sense of concern for the wards in the Adviser. The result is that the students drawn largely from the rural backward areas do not feel that higher educational system is impersonal and that they are left uncared for in their academic effort. The adviser feels that he has not reduced the teaching profession into a mechanical trade but has made it a live human experience.

The Aim

The aim of advising to assure the student of the personal care of an Adviser to make required adjustment to the demands of his college life, to plan for better achievement in his academic pursuit and to prepare him for his general career after his college course. He has the assurance that he knows at least one member of the staff very intimately to approach him for any help during his stay in the college. He feels that he is not an anonymous non-entity lost in the crowd of college students but an individual receiving proper attention. The teacher also has the satisfaction of guiding his wards and shaping the whole class into a homogeneous group with due regard to their individuality of the students thereby contributing to the academic excellence and the campus peace of the college.

The Evolutionary Process

The authors had to be many experiments before evolving the Advisory Scheme in the college. At the beginning when the Pre-University Class was in vogue each class had many advisers each being in charge of about ten wards. The Head of the Department of the major subject offered in the class (e.g. Maths/Biology/Economics) would coordinate the services of the Advisers. Later it was found that the students felt that there was no uniformity of approach followed by the Advisers (inevitably so depending upon their individuality). The Head of the Department also found it difficult to coordinate Advisers drawn from other faculties. Therefore this practice was given up. Instead each class was kept under the charge of one Adviser irrespective of the largeness of the number which sometimes went upto even 70 in some classes.

With the introduction of the +2 class in the Higher Secondary schools, colleges were left with only the undergraduate and postgraduate classes. At this stage, the number of students in each of the science major classes was usually limited to 32 or 40. Only in some humanities classes like B.A. (Economics) or B.Com. the number reached around 60. Hence for the sake of uniformity of approach by the Adviser and better understanding between the Adviser and his wards each of the major classes of the undergraduate courses was placed under tutelage of one Adviser. The same Adviser continued to be in charge of the classes for all the three years of the course developing more intimacy with his group of students and offering them more advising service.

Functions of the Adviser

For the Advisory system to be more effective the Adviser has to perform a number of functions. The success of the system depends on the number of tasks which the Adviser willingly chooses to perform and the spirit of dedication with which he does them. Some of the important tasks of the Adviser are outlined in the following paragraphs.

The Adviser is responsible for giving orientation to the students. On the first day he devotes the maximum time to give orientation to his wards. Further he is responsible to give orientation to them periodically— choosing the appropriate time and varying the methodology to suit the occasion— throughout the year.

The Adviser watches keenly the attendance of his wards since from statistics pertaining to the attendance during the effective working days of the college the authors could assert that there is a one to one ratio between the attendance of the student and his academic performance. If the Adviser notices any significant slide from regular attendance on the part of the student, informs the Head of the Department or the Principal about it or, if necessary, writes to parents so that the students' attendance may be regular. This enables most students to comply with the university's demand of 75% of compulsory minimum attendance to be put in by them.

The Adviser makes a continuous assessment of the academic performance of his wards. From office records and personal contact the Adviser knows the attainment of each student in the +2 course. He, therefore, keeps a keen watch on the academic performance of each student to see whether the performance graph continues to rise or not. If it tends to slope down the Adviser calls the ward in private and enquires about the backslide. This timely check often puts them on the right track to take their course seriously. Sometimes it may be a token of deeper problems faced by the ward. In such cases the Adviser tries his best to help the student solve his problem so that he concentrates his mind on his studies.

Through his constant personal touch with the students, the Adviser is able to spot the hidden talent of the students. He encourages them to participate in such co-curricular activities as would enable them to put forward their best. The talent-spotting task of the Adviser assumes greater importance in the case of talented youngmen who, but for the encouragement of the Adviser, would willingly allow their special skills to rust rather than shine.

Maintaining personal contact is the life-blood of the Advisory System. Therefore the Adviser develops a system by which he is able to meet the whole class for advising work at fixed periods or make himself available at appointed times for individual students to approach him. From experience the author have observed that this practice is easier in the case of science classes (where laboratory practical works are involved) and difficult in humanities classes (where there is no laboratory work and where the student strength of the class also is much more than the optimum).

To gauge the progress of the student at all stages of his collegiate life the Adviser maintains the cumulative record of the students (details given under the heading of 'Records and Support Service'). On the basis of the cumulative record he prepares the General Proficiency Certificate of the students at the end of the third year degree course. It recounts the student's attainments in various areas, curricular and co-curricular.

The Adviser performs the valuable task of offering career guidance to the students (dealt with in detail separately). He provides his wards with all the needed information for higher studies, job opportunities and self-employment. For the final year students under his charge he conducts two interviews and instructs them how to face interviews successfully.

Whenever the Adviser is not satisfied with the progress of his ward, his first corrective measure is to talk to the student in person. If this effort is not successful he might take up the matter with the

Head of Department or the Principal or the Parents. If he comes to know that the student is faced with health problems, the Adviser may refer him to the professional medical practitioners. If, in the opinion of the Adviser, the student requires counselling service he may be referred to teacher-counsellors (where a well-developed counselling scheme exists) available in the college itself.

Through these various functions the Adviser seeks to free the students from the pressures caused by problems both academic and personal. The student is able to carry on his studies with peace of mind. College life becomes useful and enjoyable to him. He realises that his individual personality has been recognized by at least one teacher who cares for him with genuine interest. Thus the functions of the Adviser contribute to the healthy personality development of the wards.

Records and Support Services

For the effective functioning of the Advisory System, the Adviser should receive full support, encouragement and appreciation from the concerned Head of Department, Principal of the College and the Management. Equally necessary is the unstinted cooperation of the college office.

Every Adviser should be supplied with a 'Cumulative Record' in the form of a small booklet to be maintained for each ward. It should contain space for the following details to be entered: Personal data (Name, date of birth, nativity, blood group etc), Family background (names of parents, parental occupation, income, number of siblings etc), School record (achievement in school — both academic and co-curricular), college record (marks in tests, university examinations, attendance, his performance in co-curricular activities, disciplinary action, if any, taken against him, etc). In short when looking at the Cumulative Record Book, one should be able to get a complete bio-data and performance record of the student. For this to be complete and up-to-date, the Principal should arrange to send periodically the list of absentees, mark lists, etc to the Adviser. The Advisers in turn should take care to post them correctly in time.

In these days of computerisation all these may be fed into a computer maintained by each adviser or by each department or kept in the Principal's office. If the required data are fed in time, whenever the progress of a student is to be ascertained (in total), a print-out can be taken for study. If necessary the print-out can be sent to the parents.

The Pivotal Role of the Teacher

The real fulcrum of the Advisory System is the *teacher* who assumes the role of the Adviser. Besides his professional competence he must have a natural flair for voluntary service and the spirit of dedication. He must have the conviction that a teacher has a vital role to play in shaping the career and developing the personality of the wards. He must have real concern for the welfare of the students. In addition to it he must have the ability to communicate his interest in the welfare of the students very effectively so that he can win their confidence and acceptance. Only with the trust of the wards in the Adviser and their regard for him can the Adviser discharge his functions meaningfully.

In an ideal college situation the Principal must be able to furnish all relevant information about all the students from personal knowledge to the parents who seek it from him. However, with the increasing number of the student population in the college, the weight of the administrative responsibilities and the pressure of unexpected turns of events on and off the campus, the Principal is hardly able to realise the ideal contact with the students. The efficient functioning of the Advisory System is the nearest solution to the problem. If a parent approaches the Principal for finding out the progress of his son in the college the Principal can confidently direct him to the Adviser if the system of Student Advising is well-established in his college. The Adviser will be able to provide the up-dated information about his ward to his father giving him the satisfaction of having received the needed information. When the parent meets the Principal again he is sure to tell him that he has found a safe heaven for his son in the college.

An effective teacher is an effective Adviser. Still it will be better if the teachers are given training in the rudiments of counselling to perform the role of advising effectively.

The Enduring of the System

However, misapprehensions about the effective implementation of the Student Advising Scheme in colleges have been expressed by neutral observers. Questions such as the ones mentioned below are raised by them: "How are we going to prospect for a proper Adviser? How are they motivated to function well? Are there not enough problems on the campus for the whole system to fail?. It must be admitted that these questions are very pertinent ones. At the same time the answers to these questions are also not too far to seek. From their experience the authors have found that the system worked well when responsibility was given to permanent teachers by turns. The additional responsibility entrusted to them added to the dignity and importance of the job.

The task of Advising was never thought burdensome by the teachers. In small departments every teacher, after serving one term of three years as Adviser, got a break of one year while in larger departments they had a two or even three years break so that they could resume their work afresh and with verve. The teachers really enjoyed their task of student advising.

There were other motivating factors as well. When the wards approached them for help the Advisers felt elated about their role. The feeling of being helpful to some one gave them a sense of job satisfaction. When they moved intimately with the students and understood their various problems, the teachers felt that their own personal experience became wide and enriched. The appreciation received from the Head of the Department, the Principal and the Parents proved to be an ample motivator. Above all, to win the affection and regard of the students was the greatest motivator. The acknowledgement of their gratitude expressed by the wards in personal meetings after the course was over or through letters was etched deeply in the memory of the Advisers. These tokens of affection were so much valued by them that their intrinsic value could not be matched by any worldly gain.

In the 20 years of experience of the authors with the system there were only two cases of problems arising out of the system as such and they were solved amicably. Hence the staying power of the system has become a time-tested one too.

Sitting at leisure in their retired life and recollecting all the services rendered to the students, the authors are happy to aver that this is perhaps the one system that has enlisted the cooperation of all concerned and has given immense mental satisfaction both to the teachers and students. If we are permitted to adapt an oft-quoted line of Shakespeare we can say that Student Advising is 'doubly blessed' — 'it blesseth him that gives and him that takes'.

III. Career Guidance

The Need

The undergraduate student has to plan his future career along with his studies so that he can make the right decision about his career at the end of his course. He needs a lot of information regarding his higher studies, job opportunities and self-employment. For gaining adequate and reliable information on careers and consultation for making proper choice the student depends on the Student Adviser and his college. Most of the students of the colleges in rural backward areas belong to the first generation scholars in a college. Their parents may be either agriculturists, petty-shopkeepers, small local businessmen, unskilled workers or artisans. They look upto the college for giving their sons career guidance. Hence the importance of organising Career Guidance Service in the college is growing day by day in the face of stiff and tough competition.

Motivation

The crux of the problem of organising Career Guidance is to motivate the students to aspire for greater things — to hitch their wagons to the stars. Motivation is said to be the product of the vision one develops and the amount of confidence one has to achieve the vision. One could have the vision only when one has all the required information about the task on hand. Lack of access to sources of information is one of the major drawbacks suffered by students from rural backward areas. Therefore it becomes imperative for college to collect relevant and authentic information and evolve a scientific process of disseminating it among the students. Retrieval of information is as important as storing it All the activities planned and organised in the college to secure this end go by the name of Career Guidance.

Career Guidance Activities

From the experience of the authors it is found that the following activities carried on in the college can form the basis for a fairly well-organised Career Guidance Programme:

1. A booklet on "Opportunities for Jobs and Higher Studies" prepared to suit the needs of the students is issued (or sold) to them. This booklet which is very comprehensive is the product of the voluntary services of a number of members of the staff of the college. The contents are explained to the students all through the three years and in particular during the II, IV and VI semesters. More and more details are given during the IV and VI semesters. Care is taken to update the book when newer courses of study are offered by various universities and newer pro-

cedures of recruitments are introduced for public appointments. Some important information is repeated so that it can make a deeper impact on the minds of the students.

2. Press cuttings and other information received periodically regarding higher studies and jobs are displayed prominently on the general notice in time. They are also removed in time so that any fresh information displayed will receive due attention from the students. The Advisers and Heads of Departments arrange for the display of such information relating to the students of their major subjects in their own departmental notice boards.

3. Relevant magazines e.g. Employment News, Competition Success Review, etc which will be useful to the students for preparing for competitive examinations and self-employment are subscribed to and made available in the library.

4. Reference books on general studies such as India Year Book, Manorama Year Book, and books on general proficiency such as numerical ability or quantitative aptitude, reasoning ability are also made available to the students. Question papers of competitive examinations held in the previous years are made available in the form of books to the students. Books useful to the students for entrance examinations such as GATE or CAT are also kept in the library for the benefit of the students.

5. Special steps to help the students are taken when advertisements for various competitive examinations appear in newspapers or magazines.

   i) Advertisements are prominently displayed on the notice board.

   ii) Details of the examination and relevant books and other materials are made available in the library.

   iii) Motivation talks by the members of the staff are arranged for the particular group of students who are most likely to sit for the competitive examinations.

   iv) Model Tests are administered so that the students would become familiar with the type of question paper in the actual examination and they could judge for themselves the speed gained by them against the one expected of them in the examination.

6. Special coaching classes for interested students who intend to prepare for entrance tests for higher studies or competitive examinations for public appointments are also arranged. For instance, Special Coaching Classes for B.Tech entrance test of M.I.T., Chennai, M.B.A. admission tests held by various universities, Junior Research Fellowship Examination, Civil Services Examination — both Preliminary and Final, Bank Probationary Officers' Examination, etc are arranged. The courses are run on a no profit, no loss basis. Members of the staff of the college who have specialised knowledge about the various examinations serve as resource persons.

7. From time to time guest lectures by the alumni of the college who have entered various professions recently are also arranged. From their experience the authors have found that guest lectures by the old students turn out to be very great motivating factors. The present students feel more free to raise a volley of questions seeking answers to all the doubts entertained by them. Such active and lively participation is not to be expected in a routine class. Old students instil more confidence in the present students and they also feel honoured by their Alma Mater.

8. Guest Lectures by those who have come out successful (other than the old students) recently in various competitive examinations e.g. Civil Services Examination, Bank Probationary Officers' Examination, etc are also arranged to motivate the students.

9. Efforts have been made to create awareness amongst students about the need for general knowledge. The monthly Quiz Programme was introduced in the college when one of the authors, became Principal of the College in the sixties. Later on Quiz Programmes using audio-visual aids were also arranged to make them more inviting and rewarding.

10. It was a unique experiment in the college to introduce a compulsory test paper on General Knowledge. At the beginning the test was left to the option of the students. Very few students took it seriously. However, the correct answers were displayed on the notice board immediately and it was noted that there was a big crowd of students noting down the correct answers. Names of the top scoring students were put up on the notice board under the caption "Roll of

Honour" and they were given prizes too on the College Day. All these practices made the students evince more interest in the test and they realised the value of the test very soon. Hence from the next year onwards General Knowledge Test (one per semester) was made compulsory. It readily found favour with the students and won acceptance from all. Those who avoided the test were marked absent as in their regular classes. The authors are happy that Manonmaniam Sundaranar University has made General Awareness as a compulsory examination paper under Part IV from 1994.

11. Giving training to the final year students of the undergraduate classes is a special feature of the Career Guidance Programme. During the VI Semester usually two interviews would be held for the students. No tips would be offered to the students regarding the first mock interview. On completion of the first interview the strength and weakness of the individual performances of the students were explained to them in private and they were encouraged to do better in the second and final interview. Then the Adviser would meet his wards collectively and explain to them the 'dos' and 'don'ts' in an interview. The students would make a review of their own performance in the light of the instructions given by the Adviser and would certainly fare far better in the second interview. The Adviser usually seeks the cooperation of the faculty of other departments as well to serve as members of the panel interviewers.

    Sometimes when students receive call letters for any interview for placements or for selection for higher studies the Principal or the Head of Department directs them to members of the staff interested in offering guidance for interview to the students and they conduct mock interviews and group discussions for such students referred to them.

12. Campus Interviews are regular phenomena arranged for the career guidance of the students.

13. Arrangements are made for students to undergo apprenticeship during summer vacation to gain practical work experience which will help them in their job-seeking effort in the future. For selecting students who deserve this training the Principal seeks the recommendation of the Student Advisers of the various degree classes.

14. Field trips to factories and establishments in places nearby the college are also arranged. Such visits serve two main purpose. They help the students observe from their personal experience the nature and the working of these factories, offices, etc so that they can explain them clearly and with confidence in case questions about them (which are very likely) are asked in interviews to be faced by them. Secondly they motivate them to qualify to get into handsome jobs in these establishments or in the ones similar to them.

15. The Principal requests the Advisers to keep in touch with their wards even after their graduation and to furnish him information about their joining any postgraduate course or job. This helps the students to feel more at home to have contact with their Advisers for career guidance even after leaving the college.

16. The Principal requests the Heads of Departments to maintain a list of all successful students who in their opinion can be safely recommended for posts in keeping with qualifications designed by private concerns known to him personally.

A Collective Endeavour

Career Guidance, which is of sterling value to the students, is one of the student services that call for collective endeavour and willing cooperation from all quarters of the college. It could be organised usefully only when the Heads of Departments, the Student Advisers, the Librarian, the Physical Director and the office staff whole-heartedly cooperate with the Principal who in this task should be backed by the Management to try novel methods.

Career Guidance is worth all the trouble involved in it. Activities associated with this programme could be carried on without affecting the academic routine and without much financial commitment. The structure of the programme could be made elastic to suit the needs not only of the present but also of the future.

When students who step out of the portals of the college and grow nostalgic about the college, they are struck primarily by thoughts of programmes like career guidance. They feel that services like these ones alone are oriented towards their careers. They never hesitate acknowledging their indebtedness to the college and the teachers who were associated with these student services. This, coming as it does, from hearts flowing with gratefulness is a matchless reward for the man-making endeavour of the teachers and the college.

Management Education in India
Emerging Issues

M. Altaf Khan*
Kamal Yadav**

Introduction

Formal management education which started in India in 1950, with the opening of Master of Business Administration (MBA) curriculum in the Department of Commerce in Andhra University, has come a long way since then. The current decade has been marked by tremendous growth in the number of management institutions, most of which have come up in the private sector. A record number of 222 new management institutions/programmes were approved by All India Council for Technical Education (AICTE) in 1994, most of which have become functional from 1995. Next to USA, India has the largest number of management education institutions compared to any other country. Today in India an MBA degree is considered a key to success in the corporate world and is probably the most sought after professional qualification. The demand for MBAs in the corporate world is constantly increasing. The average initial salary offered to MBAs belonging to leading business schools has gone upto more than Rs. 1.5 lakh per annum with peak initial offerings going even more than half a million, — leading to coining of term GOMBA — Grossly Overpaid MBAs.

The growing importance of management education and the exponential growth taking place in the field is a welcome step, but at the same time they pose a number of questions and challenges. Therefore the present desk research which concentrates on full time management programme aims at focussing some light on the emerging issues in management education in India, such as the mushrooming of management institutions, gender imbalance, demand of corporate world and the changing business environment. All these issues need an indepth study for producing future management graduates.

Management Institutions

The mushrooming of management schools, provides more opportunities for the students but at the same time it raises some doubts. How does a student evaluate a management institute and its programmes? (As per a recent advertisement, Maharashtra alone offers 5,000 MBA/MMS seats in over 50 government recognised university/institutes). This question is particularly relevant as management education in India is of very uneven quality. On one hand, some of the leading institutes are comparable to the best in the developed countries, whereas some institutes don't even have proper infrastructure and faculty. Prospective students, especially those residing in towns or smaller places, have only the glossy brochures of the institutes to look into in which each one appears to be the top institute of the country and an institute with a difference. The facts in some cases may however be quite contrary. Therefore, an effort has to be made to provide some sort of rating mechanism for the management schools based on criteria like infrastructure, faculty, method of teaching, job placement, placements for summer training, interaction with industry, research undertaken, etc. Though this may not be possible immediately, at least there should be some mechanism for the time being whereby prospective students could get very objective details on the above mentioned parameters with the ultimate aim to have a quality assurance process and rating system. There may be counter views on this aspect that the institutes which are not upto the mark will automatically be rejected by the users. However, this is too important an area to be just left to the market forces alone. Some sort of rating/grading mechanism for institutes will go a long way in serving the interests of the prospective students and may also help in checking blind commercialisation of management schools. Further, efforts should also be made towards having a common entrance exam for all management institutes. This will be of value benefit to students, both in terms of money as well as time.

Gender Imbalance

In spite of a gigantic growth of management institutes, the number of women in management field in India stands at an abysmal 10% at middle management level and just 1% in senior management positions. A lot of thinking is required in this regard on the part of professionals in the field of management education. The underlying reasons for these small numbers have to be found out and properly addressed to. The management institutes may also think in terms of providing some reservations for women or giving relaxation in entry norms. Also, studies should be carried out on female passouts of last few years — working as well as non-working — from the management institutes to get relevant feedback so as to make future plans accordingly.

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Demands of Corporate World

Increasing competition and quick changes in business environment have brought in more work pressures. In today's business world, stress has become unavoidable and one has to learn to cope with it, which otherwise could result in emotional instability, physical disorders, depression etc, and even best of managers may not be able to give desired results because of it. In a study of 6,427 executives, conducted by Escorts Heart Institute and Research Centre, 30% tested positive for stress. It is in this context that areas like Stress Management and Time Management have become highly relevant in today's corporate world. Also, risk taking, result orientation, ethics, team spirit, adaptability are some of the values which the management institutes have to develop among the students. All these should be taken into account while designing the curriculum. Also, efforts have to be made by the institutes to probe the personalities of the students and counsel them accordingly about suitability of particular area of specialisation and type of job. Such an effort would minimize job mismatch and dissatisfaction. There could even be some psychometric tests at the interview stage of admission, to see if the candidate is a potential manager for the industry or not.

Changing Business Environment

In the wake of liberalisation of Indian economy and its integration with global economy, the management institutes have to rise to the challenge of producing global managers. Indian companies have now to operate in global context, wherein continuous changes and improvements are required. Unlike past, organisations have to keep pace with international competition, technological advancements and be customer responsive. The courses/programmes being offered have to be modified accordingly with greater focus on service sector, technology management, quality, IT, customer service, competitive strategies, environment management etc. The management schools have often been blamed for being slow in responding to changing business needs and therefore, special efforts have to be made to keep pace with the developments taking place in the country as well as outside. Towards this end, a continuous and close interaction is required between practitioners and academicians. Such an interaction will make management education more practical and need based and on the other hand, with the active participation of practitioners, the problem of inadequate faculty can also be solved. Also, the students have to be given more exposure to practical business working. The profile of an American management student is quite different from Indians students. An American management student, with an average age of around 27 years has a prior industry experience of 5-6 years at an average before joining the management institute, whereas an Indian student, with an average age of 22 years has very little work experience. A practical training of 6-8 weeks during the 2 years management programme seems to be inadequate. A 4-6 months practical training may be included as a compulsory component in the management programmes. Towards this end, a close association with the industry is a must and mutual benefits for industry and the institute have to be properly brought forward.

Conclusion

These are some of the areas requiring attention of management institutes in India. The nature of response by the institutes to these would be known in the time to come. Ultimately, the success of management institutes and thereby management education, would largely depend on how quickly and effectively they are able to adapt and address themselves to the needs of the society and the changing business environment.

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communication should, however, be brief and to the point.

Teacher Education in Maharashtra

Dhaneswar Harichandan*

It has long been a convenient notion to identify development with economic growth alone. However, development assistance to the education sector, probably more than to any other sector, is very much dependent on the overall concept of development as education has many interdisciplinary and intersectoral characteristics. One such sector may be Teacher Education. It is a fact and accepted by almost all educationists that a good education depends on a good teacher. And the quality of the teacher depends on the quality of teacher education. Kothari Commission also has observed that "the future of a country is shaped in her classroom" implying the significant role of classrooms. And certainly the classrooms are managed by teachers. Therefore, it all depends upon the efficiency of the teacher in classrooms. It is developed through teacher education programme.

It is presumed that a university teacher needs no training after obtaining his post graduate degree. He is directly engaged in teaching the students. So far we have not questioned the teaching methodology adopted by the university teachers nor the non requirement of training. Whereas it is argued that the primary & secondary teachers need training to be good teachers and of late it has become essential qualification for such recruitment. Precisely this is the reason why all quantitative surveys and evaluations of primary & secondary education give statistics on the extent and quality of teacher education. In the following sections an attempt is made to take an overview of primary & secondary teacher education in Maharashtra and take a close look at secondary teacher training programme of University of Bombay and draw conclusions.

The State of Maharashtra

During the British rule in India, most of the present State of Maharashtra was under the Bombay Presidency. After India attained independence, the states were reorganised on a linguistic basis and the State of Bombay was formed in 1956, including parts of the present state of Gujarat. After a decade long struggle for a unified Maharashtra, the present State of Maharashtra came into existence on 1st May, 1960. It was then made up of 26 districts; thirteen of these including Greater Bombay, were part of the former State of Bombay; eight districts forming the Vidarbha were part of the former state of Madhya Pradesh; and the remaining five districts forming Marathwada originated from the Andhra region. Following the subdivision of some of the districts, Maharashtra presently comprises a total of 30 districts.

Primary Teachers Training

In our country primary teacher training is diverse in terms of time, curricular content, management, educational input & student population. Some programmes are one year post middle school courses, some are two year post middle school courses, some are one year post matriculation/higher secondary courses. The management of teacher training institutions are either government, semi government or private. The eligibility requirement for students is quite varied. Some are first generation learners, while other come from educated family backgrounds. Some are urban while others are rural. There are schools with one teacher for all the classes, with untrained teachers, and inadequately trained teachers, with varying degrees of subject competence. However, after a good deal of discussion, a framework for a teacher education curriculum was thrashed out by a Joint meeting of the National Council for Educational Research & Training and University Grants Commission (NCERT and the UGC).

Maharashtra was one of the states where teacher training in some form for primary level teachers has existed since 1824. As the Indian Institute of Education (IIE) report points out, in Maharashtra during all these years, i.e. between 1870 & 1984, the syllabus of primary teachers training was revised several times in 1884, 1899, 1910, 1925, 1945, 1966, 1972 & 1983. A radical revision of the primary school course inevitably affects the requirements of training institutions. What happened in Maharashtra, more or less happened in most of other states. Thus Maharashtra is the torch bearer. As new ideas from the western countries affected the syllabus, the gap between curricular demand and teacher competence began to widen. Hence there was intensive training of teachers. In the aftermath of National Policy on Education (1986) and with our commitment to Education for All (EFA) there has been a considerable change in teachers training programmes too, not only in Maharashtra but also in other parts of land.

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The manner of admitting students for training is diverse. There are inservice teachers who are deputed for training. Seats are reserved for them. In most training institutes, seats are reserved for SC, ST & OBC candidates. Often seats are also reserved for the students of minority institutes. Admissions are based on performance in the last examination, an admission test, or a viva-voce test.

The trainers of these teachers are mostly trained graduates, though some also have postgraduate training. During the training programme, the students are taught contents and methodology simultaneously. Thus the teachers' training institutes try to achieve these twin objectives. No doubt the trainers responsibility is doubled. But the common experience is that the trainers do not do justice to the profession. They simply do certain things for the sake of doing it. Thus it serves no purpose. Today these teacher training programmes are looked upon merely as orientation or initiation to teaching learning process and not serving the objectives of training the modern teacher.

Salaries in teachers' training institutes being low, there is a great deal of variation in the quality of trainers. Even the teachers in primary schools are getting more salaries than their teacher educators. Two weaknesses stand out even in a cursory survey of the situation. First, there is a deficit of Science graduates as teacher educators and there are often teachers whose subjects are of no immediate use to the institutions and subjects in training institutes which do not have teachers. Subsequent to low quality of teachers being appointed in these institutes, the quality of instructional programmes becomes dismal. Although the syllabus may be rich in content, lack of qualified staff to implement it makes nonsense of such syllabus. Again the syllabus for teacher training is often framed by Committee of State Education Departments who have little idea of objective reality.

Schools for practice teaching are few and far between. They are selected not necessarily on the basis of academic criteria, but on the basis of proximity to the training institutes, availability of accommodation, cooperation, and other facilities. Since many of these schools are inadequately staffed quantitatively, and have staff of poor quality, since many of them are ill equipped and peopled with backward students, the practice teaching in such schools remains a ritual. Even these schools do not have the capacity to absorb the benefits of improved methods and materials.

Work experience is a compulsory subject in Maharashtra. But the inputs of these programmes are so poor that they seldom create enthusiasm and motivation. Community work programmes are more symbolic than functional.

What is really a most persistent and bizarre situation is that, in spite of many qualitative and quantitative improvements brought about through governmental intervention, the primary teacher educators have no special orientation for teaching in primary teacher training institutes. Most of them do not have teaching experience in primary schools, as a result of which they prepare teachers for primary schools, but their personal experience and background are that of secondary schools This is a reality. While Delhi has introduced Bachelor's degree in Elementary Education i.e. B.Ed (Elementary). It is high time, Maharashtra Government thinks on similar lines keeping the national objectives in view.

Secondary Teachers Training

The situation more or less is similar in case of secondary teachers training institutes. Secondary teacher training courses in Maharashtra are offered by both non-governmental institution and by state governments. There are aided institutes which receive financial assistance from the state but are managed by the Committee/Trusts. Therefore, recruitment of teachers to these institutes are made by the Managing Committee while their salaries are paid by the state government. Herein the personal idiosyncrasies of the management still persist, often compromising with quality.

A few universities in Maharashtra have instituted teacher training through distance mode. While these are considered as cheaper substitutes for formal training institutes, most of the private training institutes take it as a profession for minting money. In the early nineties with the change in policy of the Maharashtra Government, many private management bodies started teacher training programmes as a result of which there was mushroom growth of these institutes during this period.

There is also part time training provision for teachers working in recognised schools. Yashwantrao Chavan Maharashtra Open University (YCMOU), Nashik has also introduced inservice teacher education programme through distance mode which is restricted to the working teachers.

Regarding admission of students, there is a debate to introduce attitude tests for prospective teacher but no final decision has been taken as yet. Admissions are based on the same procedure as in case of primary teachers training.

Regarding qualification of teachers, though Maharashtra Government follows the UGC pattern and insists on candidates qualifying either National Eligibility Test for lecturership (NET) conducted by UGC or State Eligibility Test (SET) conducted by Maharashtra Government. This test is usually conducted twice a year so as to clear the backlog of those teachers who have not qualified for the same. However, for recruitment of teachers through Maharashtra Public Service Commission, the candidate should be a double postgraduate, one in education and the other in one school subject.

If one looks at the results, one is struck by the performance of teacher training institutes. Percentage of pass in graduation courses is somewhere between 50 to 60. But in these teacher training institutes, in spite of internal assessment, where one hears of subjective bias, an external evaluation at the end of the term, the results are between 95 to 100 per cent. This is all the more striking as laboratories, libraries and other academic inputs are acknowledged to be inadequate and unsatisfactory in most of these institutions.

Teacher Education Programmes Across Universities of Maharashtra

Of the nine universities in Maharashtra almost all the universities are offering teacher education courses either at the university level or through their affiliated colleges. The universities are Bombay, Poona, Nagpur, Amravati, Shivaji, SNDT, North Maharashtra, Dr. B.R.Ambedkar & YCMOU.

Teacher Education Programme of University of Bombay

Currently there are 27 colleges of education engaged in imparting training to the prospective teachers. Of these, "twelve colleges are either government or getting aid from the government. Remaining colleges are un-aided some of which are run by minority".

Besides conventional training programmes through the colleges affiliated to the University of Bombay, it has provision of Part-Time B.Ed. for working teachers. Institute of Distance Education, University of Bombay also has opened Masters Degree Programme in Educational through distance mode, some of the colleges also offer M.Ed. degree course along with B.Ed. Again university Department of Education also offers M.Ed., M.Phil. & Ph.D. programmes in education.

Although a new dimension to teaching and research is added in the colleges of education by way of introducing extension education, it has still a long way to go especially in its attempt at involving the community within the fold and strengthening the parent teacher association. Very little research of significance and relevance is to be seen in most of the colleges of education affiliated to University of Bombay with the exception of University of Bombay's Department of Education. Even the University Department of Education has not made much dent into the research areas. Most important studies about dropouts, science teaching, improved curriculum, material production, impact of distance education etc, have been conducted elsewhere. Let alone sophisticated research, even studies of simple research topics are conspicuous by their absence. Project report which is a requirement for B.Ed. programme is far from achieving its objectives. The students are told to follow some prescribed format without even understanding the same.

Schooling in Maharashtra

As per the fifth All India Education Survey conducted by NCERT, Maharashtra has a total number of 63,582 schools (primary, upper primary, secondary & higher secondary) with 4,08,930 teachers in all schools. In rural areas there are 52,229 schools, in urban areas there are 11,353 schools, there are 7,187 secondary schools with 1,10,511 teachers in all. Rural area is represented by 4,586 schools and urban areas by 2,601 schools (only secondary). More than 80 per cent of the teachers are trained. Therefore there is a need that the existing teacher training institutes should organise orientation/refresher courses of short duration for continuing education of teachers.

Conclusion

There has been a qualitative change in the role of the school as well as the role of the teacher. While the schools are called upon to deal with the national objectives laid down from time to time, the teacher is called upon to be a change agent, a mobiliser, a facilitator to the developmental needs of the community. In this process, the traditional wisdom is lost in the quest for dubious knowledge. Teacher has to be trained to respond to the societal needs. And the need is education for all. It is high time a distinction is made between a teacher who removes illiteracy and one who imparts sophisticated knowledge. Teacher education in Maharashtra needs to be reshaped accordingly.

References

Bengali, Mehroo (1985) *Alternatives in Teacher Education* paper presented at the JP Naik National Seminar, IIE, Pune, 1984-85.

Harichandan, D (1996) "Utilising Distance mode for Universal Education and Teachers Training". *Progress of Education*, Vol. LXX, No. 9, April.

Indian Institute of Education (1984), "Training of primary School Teachers in the context of Universal Primary Education, Report 1979-83, Pune.

NCERT (1990) "Fifth All India Education Survey", A concise report, New Delhi.

NCERT (1978) "Teacher Education Curriculum, A Framework" New Delhi.

Pattanayak, DP (1986) "Teacher Education" in Malhotra, PL (eds) *School Education in India: Present Status & future needs*, NCERT, New Delhi.

Shri Shahu Ji Maharaj Kanpur University, Kanpur

Notification No./SSJMKU/1/97/Estt/172 Date 3/4/1997

Applications are invited on the prescribed forms for appointment to the following posts in the University Institutes/Departments. The number of posts, essential qualifications for the faculty positions, area of specialization, posts for reserved categories and other relevant details are as under. Reservation applied as per U.P. Govt. rules and regulations wherever applicable.

Name of the Deptts.	Professor No. of Posts	Asstt. Prof./Reader No. of Posts	Lecturer No. of Posts
(A) Institute of Engineering and Technology			
1. Physics	—	3 (SC/UR/OBC)	3 (SC/UR/OBC)
2. Chem. Engg.	1	—	1 (UR)
3. Maths	—	3 (UR/SC/UR)	3 (SC/UR/OBC)
4. Chemistry	—	2 (OBC/UR)	3 (UR/OBC/UR)
5. Humanities	—	—	1 (SC)
6. Mech. Engg.	1	—	2 (UR/OBC)
7. Electronics & Commu.	1	—	1 (SC)
8. Computer Engg. Deptt.	1	—	2 (UR/OBC)
(B) Deptt. of Education	1	—	—
(C) Dept. of M.B.A.		2 (UR/SC) (Carried forward)	1 (OBC)

Pay Scales :

a) Professor/Director	Rs. 4500-150-5700-200-7300
b) Asstt. Prof./Reader	Rs. 3700-125-4950-150-5700
c) Lecturer	Rs. 2200-75-2800-100-4000

(D) Director College Development Council (one post)

Essential Qualifications & Experience :

A first or high second class Master's Degree (Minimum 55%) and Research Degree with 10 years teaching experience of P.G. classes and guiding Research at Doctoral level.

Desirable Qualifications :

Candidate possessing experience and familiarity with UGC work or experience of Regular functioning with various Departments of UGC. The post is temporary but is likely to continue. The appointment will be made for a period of three years only.

Retired persons may also apply but not beyond 62 years of age.

The Director shall be responsible to the Vice-Chancellor and shall function as per UGC guidelines.

(E) Professor cum Director, Adult and Continuing Education (one post)

The department of Adult and Continuing Education is a temporary establishment and its continuation depends on the period of grants available from UGC or U P State Govt. Hence, the period of appointment on the post of Director is subject to the extension of the period of grants to the Department.

Essential Qualifications & Experience :

A first or high second class Master's Degree (minimum 55%) and Research Degree with 10 years of experience of P G classes teaching in the discipline of Social Sciences and guiding research at Doctoral level.

Desirable :

3 to 5 years experience in Adult and Continuing Education and Extension work.

OR

Outstanding contribution in the field of Adult and Continuing Education and Extension work.

Note : All the posts are temporary but are likely to be permanent.

Important :

(i) The OBC candidates are required to send their Non Creamy certificate as per Government Notification No. 22/16/12t-2/1995 TC dated 8 December, 1995 as amended otherwise their applications will be considered in General Category.

(ii) The candidates belonging to SC/ST and OBC are free to apply as General Candidates also.

How to apply :

Prescribed application form alongwith the information relating to the qualifications and specializations for various posts as per the AICTE Norms and Statutes of SSJM Kanpur University, Kanpur can be obtained from the University counter either on cash payment of Rs. 100/- or by sending a crossed Bank Draft of Rs. 100/- drawn in favour of 'Finance Officer SSJM Kanpur University Kanpur' alongwith a self addressed envelope of 25 cm x 12 cm size affixing postal stamps for Rs. 12/- only.

Five copies of the completed application on prescribed form accompanied with a testimonial should reach the University on or before 16/5/1997.

The envelope containing application form should be superscribed as 'Application for the post.........'. Address for all correspondence : Registrar, SSJM Kanpur University, Kanpur - 208 024.

(Dr. R.S. Bansal)
Registrar

PATEL

Education for Empowerment

Dr. Manmohan Singh, former Union Minister for Finance, delivered the Convocation Address at the Thirty Second Convocation of the Bangalore University. He said, "A well designed educational system can be a powerful factor for the empowerment of the poor people and for promoting the goal of equality of opportunity. ..... If we do not achieve universal access to quality education, affirmative action by way of reservations in public services and legislatures for the disadvantaged groups can achieve only limited results for combating their inherited social and economic disabilities. Moreover, the potential of our university system to contribute to the empowerment of our people will also not be fully realised if a large proportion of our children do not have access to quality school education." Excerpts

The future, being inherently uncertain, gives rise to both hopes and fears. A major objective of a good educational system should be to enable the students to meet the challenge of the future with confidence.

We are living in an era in which human knowledge, particularly scientific and technological knowledge, is increasing at an exceptionally rapid pace. This in turn is having profound impact on the social, economic and political evolution, including international relations. The sheer rapidity of these changes is an added source of uncertainty.

Properly harnessed, new technologies can be a powerful instrument for the eradication of mass poverty, ignorance and ill health which afflict a large segment of our population. For example, the new bio-technologies have revolutionary implications for improving productivity of our agriculture and for devising more effective health care strategies for control of communicable diseases. Similarly, new renewable decentralised sources of energy, flexible manufacturing techniques and just in time methods of inventory control can greatly enhance the competitiveness and productivity of decentralised modes of production. Telecommunication, satellite and information technologies can greatly add to the effectiveness of mass literacy and public health awareness campaigns.

At the global level, the revolution in communication and information technologies is bringing about an integration of national economies which was unthinkable even a decade ago. Assisted by the progressive liberalisation of international trade and capital movements, these new technologies are helping to create a new global economy which offers opportunities for poor countries to leap frog in the race for social and economic development but also contains risks for further marginalisation of those unable to cope with the pace of change. The final outcome will depend on the efficiency and effectiveness of a country's social, economic and political structures for the management of change. The design and quality of the educational system can have a significant influence in this regard.

First and foremost, we need an educational system which enables our teachers, scientists, technologists, managers and administrators to operate on the frontiers of knowledge. In a world characterised by exceptional rapidity of technological changes, education has to be viewed as a continuous lifetime process of learning. Education and training have to be reoriented to meet the challenges of the information revolution. An abiding commitment to the pursuit of excellence ought to be the core of the value system which inspires our educational establishment at all levels.

However, harnessing the vast latent potential of human knowledge for social good is not simply a matter of upgrading our educational skills. More fundamentally, it involves the cultivation of an inquiring mind-set receptive to change even though that change at times is disruptive of the status quo. Only then can create an environment sufficiently conducive to the development, assimilation and absorption of new technologies into production processes, the consequent of new markets and the introduction of new management systems. In an increasingly inter-dependent world that we live in, there ought to be a general recognition of the role of increased participation in the evolving global economy for widening our development options. We have to be fully prepared for inevitable globalisation of product markets, financial markets and in services. Properly designed, both international trade and investment policies can considerably help to accelerate the rate of growth of national income and employment. By contrast, autarky and an excessively inward looking development strategy can perpetuate both technological and economic backwardness. Yet one has to reckon with the strength of inertia and the fear of unknown in human affairs. As Lord Keynes used to say, politicians everywhere tend to be salves to some defunct economists. If India's vast latent development potential is to be realised, we need a leadership which is intellectually alert, imbued with a scientific temper and is willing to meet the challenge of social and economic change. In the final analysis, only a strong educational system committed to universalisation of access to elementary education of sufficiently high quality and a university system committed to pursuit of excellence can help create mind-sets which accept the inevitability of change and indeed celebrate it.

Judged against this objective, the present educational scene in our country is none too encouraging. Even after 50 years of Independence, the national literacy rate is as low as 53 per cent. Among women it is less than 40 per cent. The heavy drop-out rate among children who enter our school system indicates that the environment of our schools and the curriculum do not pay adequate attention to the needs of the first generation learners i.e., children coming from families with no previous background of parental education. A well designed educational system can be a powerful factor for the empowerment of the poor people and for promoting the goal of equality of opportunity. Unfortunately, our educational system does not live up to these ideals. Outlays on education fall far short of requirements. In a country where resources are scarce, education budgets will continue to be starved of funds unless there is willingness to give up large scale implicit and explicit subsidies built into our public finances for a wide variety of goods and services including power, irrigation, transport and bank credit. If we do not achieve universal access to quality education, affirmative action by way of reservations in public services and legislatures for the disadvantaged groups can achieve only limited results for combating their inherited social and economic disabilities. Moreover, the potential of our university system to contribute to the empowerment of our people will also not be fully realised if a large proportion of our children do not have access to quality school education.

As I look back on my own career, the many opportunities for personal advancement that I got in my life were largely a result of the emphasis my parents laid on my education.

I went to the local village school for my primary education. But I was extremely fortunate in having as my teachers two honest men of sterling character who instilled in me a love for learning, a commitment to hard work and capacity to question things. Thus when we talk of a reform of our educational system, we should not be thinking merely in terms of quantitative expansion but also of qualitative improvements, particularly those relating to the quality of teachers. Viewed against this background, the gaps in our educational performance would appear to be still more serve.

I have often noticed that the teaching of science and mathematics, the mother subjects, is particularly deficient in our schools. Without adequate stress on the teaching of these subjects we shall not be able to build a self-confident nation imbued with rational thought processes and not easily swayed by superstition and blind faith. University teachers ought to take a more active interest in improving the quality of teaching of science and mathematics in our schools.

Imparting knowledge to the pupils is an important function of education. But as Plato emphasised long ago, perhaps more important is the task of enabling a pupil to think on his own. Moreover, if knowledge is to lead to the growth of wise and enlightened citizens, there ought to be strong emphasis on value education, and on fundamental human values such as tolerance and respect for religious, cultural and linguistic diversity

Whenever I address a university audience, I am invariably asked about the employment situation and prospects. I share the concern of our youth for securing gainful employment after they leave their schools and colleges The honest answer to their queries on this score is that job creation depends on the overall rate of economic growth and the labour intensity of the growth process. I am convinced that if our economy manages to grow at 7-8 per cent per annum, we shall be able to create enough job opportunities to absorb all the new entrants to our labour force. Government has a major responsibility to create an overall environment in which both national income and employment can grow fast enough. Maintenance of macro economic stability — a low rate of inflation and prudent management of our balance of payments is absolutely essential. In addition, Government has also a major responsibility for maintenance of law and order, establishment of effective delivery system for such basic social services as elementary education and primary health care, infrastructure development, environment protection measures and the establishment of social safety nets to protect the more vulnerable sections. We designed policies in all these areas backed by credible delivery system can soften very considerably the harsh edges of extreme poverty and in the long run to overcome it. However, it will be quite improper for our people being led to believe that our politicians and the Governments they control have found some magic instant cure to remove mass poverty.

The rise in living standards is linked to the growth of national productivity and there are no short cuts to it. Mass poverty can be removed only on the basis of a firm commitment to hard work and utmost social discipline sustained over a fairly long period of time. A political culture in which politicians promise public spending and subsidies for almost everything even when Government treasuries are empty breeds only cynicism and dilutes our people's faith in politics as purposeful vehicle of social change. We cannot simply spend our way into prosperity. We need to build a broad national consensus on basic issues of social and economic development. We have to create an economic environment which encourages the growth of savings, investment and productivity. In this context, there ought to be general awareness of the fact that uncontrolled population growth and the promotion of a life-style destructive of the essential life support systems of our planet constitute powerful barriers to the removal of mass poverty. As I see it, much greater emphasis has to be placed on individual responsibility and on awareness and concern for the consequences of one's actions and product for the welfare of the group or community at large. Our schools and colleges are probably the best places where such a reorientation ought to begin.

This year we are celebrating the golden jubilee of our Independence. Our country has achieved a lot in the last fifty years. Even then, the pace of progress has fallen far short of the aspirations of our people and the objective potential of our country. There are many disturbing features in the present situation. There is increasing concern about the caste and religious divide, widespread corruption in our public life, large scale tax evasion, criminalisation of political processes, growing violence and tardy implementation of laws on the statute book. Urgent reforms are needed to restore our people's faith in the processes of governance. In the final analysis, the many weaknesses which have assumed such alarming proportions are basically a symptom of the weakening of our moral fibre. We need a multi-dimensional drive for the moral regeneration of our polity and society.

We have to recapture the spirit of idealism and self-sacrifice which characterised our freedom struggle. The members of the vast academic community can play a major role in mobilising the resources of our civil society for this vital national task. I sincerely hope that the teachers and students of this university are alive to their responsibilities as enlightened citizens and that education in our country will indeed become a powerful instrument for reshaping our national destiny.

TEZPUR UNIVERSITY
(A CENTRAL UNIVERSITY ESTABLISHED BY AN ACT OF PARLIAMENT)
TEZPUR - 784001
ADVT. NO. TU/ESTT/ 80/T-NT/2/97

Applications are invited from eligible Indian citizens for filling up the following posts :

A. TEACHING POSTS.

Department	No. of posts Professor	Reader	Lecturer
1 Chemical Sciences	2	1	–
2. Electronics	1	1	1
3 Molecular Biology & Biotechnology	2	1	–
4. Information Science & Technology	1	1	–
5. Energy	–	–	1
6. Physics	1	1	2
7 Business Administration	1	2	–
8. English & Foreign Languages	–	1	2
9. Mathematical Sciences	–	1	1

B. NON TEACHING POSTS :

Department	No. of posts
1. Pharmacist	1
2. Medical Laboratory Technician	1
3. Jr. Office Assistant	For empanelment
4. Laboratory Supervisor (Deptt. of Electronics)	1

Prescribed application form and other particulars in details about the posts may be obtained free of cost from the office of the undersigned either in person or on written request accompanied with a self-addressed stamped (Rs. 5/-) envelope within 5th May, 1997. (name of the post should be specified).

Last date of receipt of completed application is 25th May,1997.

Sd/-
Registrar, I/c
Tezpur University.

DU Plans Centre for Career-oriented Courses

Delhi University plans to set up a Centre for career-oriented programmes to meet the demands placed by changes in global economy, technology and competition. It hopes to begin five courses from the coming academic session.

A committee, set up in August 1995 by the university, under the chairmanship of Prof. Abid Hussain, in its report submitted recently, has observed that every year the number of unemployed and under-employed is rising. "There is an urgent need for both sides, universities and the productive sector, to look carefully at the whole system to ensure the supply and demand match."

The committee has recommended a centre, to be headed by a full-time Director assisted by two coordinators. The centre would have the overall responsibility of implementing, monitoring and developing career-oriented programmes. It would take care of the entire gamut, from curriculum development to training and placement, and interaction with trade and industry.

The committee has suggested five new job-oriented bachelors degree programmes in accountancy, food technology, graphic arts and communication, computer applications, and fashion designs and technology.

With the opening up of the economy, the demand for junior- and middle-level accounting professionals is increasing fast. There is, therefore, an acute need for professionally qualified accounting personnel at these levels. Available, however, are chartered accountants who are too highly qualified for the job or graduates who have not specialised in the field.

Similarly, in the food processing industry, new job opportunities are opening up for those able to acquire the technical knowledge necessary for this specialised area, says the report. The demand for dietetic technicians, too, is growing, with growing emphasis on health and nutrition.

The report says the objective of a bachelor's degree in graphic arts and communication is to prepare students for a wide variety of positions in which art is related to commerce and industry. Advertising agencies suggested there is a tremendous need for design positions in advertising, illustration and art studios.

In the rapidly changing field of information technology, the report says, the need for trained personnel in the field of computer applications hardly needs emphasis. With the entry of multinationals, revolution in communication and globalisation of the economy, there is a demand for qualified personnel.

The report says fashion designs and technology also offer attractive employment opportunities as dress-makers, fashion designers, exporters to persons interested in working with clothing and fashion technology. In addition, numerous opportunities are opening up in the readymade garment and knitwear industry.

The centre would have units for curriculum development, placement and training and faculty development. The first would constantly update teaching and training materials for existing programmes, and try to launch new innovative career-oriented programmes.

The placement and training unit would liaise with business and industry, keep an inventory of potential employers, and coordinate the placement activities of different departments and colleges. It would also be responsible for career counselling and related activities.

The faculty development unit would periodically organise training programmes, in collaboration with other departments and centres.

PG Diploma in Women's Studies

The Vice-Chancellor of Dr. B.R. Ambedkar Open University, Prof Afzal Mohammad, announced that the University would introduce a Post-Graduate diploma course in women's studies from the next academic year. He was participating in the national seminar on the "Status and the Role of Women in Development of India"organised by the Women's Development and Extension Centre of the University. He observed that the gender issues were discussed only at academic meetings without involving the women hailing from the middle and lower level of the masses.

The planners should realise that the development of women was a multi-faceted one and mere announcement of reservations would not help them, he said.

The President of the Andhra Mahila Sabha, Prof Vanaja Iyengar, said healthy female aggression in the form of various women's agitations had largely remained urban-oriented and failed to reach the rural populace.

Awareness brought through these movements had given women a new confidence and made them realise their potential, she said.

Prof P. Geervani, Vice Chancellor of Sri Padmavati Mahila University, in her keynote address, expressed hope that the recent steps taken up by the government through the 73rd and 74th Constitutional amendments would further contribute for the development of women.

About one million women were expected to emerge as leaders at the grass-root level in the rural areas alone, she noted.

Though development was a gender neutral process, women were marginalised from participation in national development of the country following several constraints like low literacy level, social taboos and poor health status, Prof Geervani felt.

Dr. S C Bhargava, Director of the UNICEF, lamented at the absence of women's participation at the grass-root level. Excepting prohibition, there had been no effort to highlight the other social issues like the child mortality and the uplift of the status of women, he said.

TN Plans New System in Engineering Admission

The Tamil Nadu government proposes to introduce a new "single window" system in admission to engineering colleges from this academic year onwards. The system, conceived to provide greater transparency in selection and payment of fees, is described as "pro-student".

Under the new procedure, only two admission lists will be compiled — one for OC and reserved categories and another for special categories including the handicapped and sportpersons.

An independent agency will be entrusted the responsibility of the 'single window' admission to all institutions including the Anna University, the REC (Tiruchirapalli), the Government, aided and self financing engineering colleges.

A fully computerised network will provide the logic support to the agency in scrupulously following the admission procedure. This is expected to eliminate any scope for complaint of malpractices in selection and admission.

The over 25,000 seats in all the engineering institutions will be put in one pool and a single application form issued on behalf of all the colleges by the second week of May. After the publication of the qualifying Plus two results, the students will file their applications including in them the marks they had obtained in the common entrance examination.

The details will be entered into a computer which will rank the candidates selected for admission on the basis of the marks in the qualifying and entrance examinations and the reservation categories.

Then will follow the screening and allotment, strictly on the basis of the ranking and the reservation category in the selection list. The candidates will be called on fixed days by the 'selection agency' for allotment of the college and the course. About 500 to 1000 candidates will be screened in a session of three hours. Three or four such sessions are planned to be held every day in a central location in the state.

During the admission, the candidates will be given a computer code number which will indicate the college, the branch and the category under his or her allocation has been made. The number will be linked to the examination list to be sent by colleges during each year, so that the agency can keep track of the number and ensure that there is no manipulation in the post-admission stage.

The high-level committee appointed by the State Government to look into the working of self-financing colleges, headed by the Vice Chairman of the State Council for Higher Education, Dr. M. Anandakrishnan, has been mainly instrumental in evolving the procedure.

Indo-U.K. Partnership in Education

Setting up systems for rating/accreditation of institutions and faculty and strengthening of "industry-based, industry-led continuing education and pre-employment education" were identified as focus areas for partnership between Britain and India in the education sector at a seminar held recently in Chennai.

"When we seek to set right the economy, education comes on top of the agenda, and when want to set right education, the economy comes on top of the agenda", said Baroness Perry, Chairman of the UK Department of Trade and

Industry's Education and Training Sector group, in a sum-up of the crisis that had overtaken the economy and education systems in various countries and the way Britain successfully dealt with the problem in the past 15 years.

Baroness Perry's remark at the conclusion of the seminar reinforced the presentations made earlier by representatives of British university systems, consultants and companies on the UK's experience since the eighties in using the education system to revive the global competitiveness of British industry. The problems faced by Indian industry vis-a-vis education and training were highlighted by Indian industrialists and academicians.

Typical of the new ways of the British managing their HRD was the announcement made by representatives of the London School of Economics and Political Science (LSE). Ms Anne Brown and Mr Crispin Lyden Cowan, that the LSE was conducting a "test marketing" of distance education, and depending on the results, it would go in for this sector, combining this with "contract teaching". They also announced that the LSE was at a "very, very preliminary stage" of exploring the possibilities of an exchange programme covering faculty and students of Indian Institutes of Technology (IITs) and the Indian Institutes of Management (IIMs).

The High Commissioner, in his closing remarks at the seminar, said worldwide revolutionary changes had affected both Britain and India. The real revolution would lie in "readjusting public and private sector".

Prof. Kumar Bhattacharya, Head of the Warwick (University) Manufacturing Group and chairman of the Education Committee of Indo-British Partnership Initiative, said that under the IBPI, he himself and Dr. P.N. Bhagwati, Chairman of the Technical Education and Training Committee of the CII, would identify six companies each from India and Britain for collaboration with possible involvement of British universities.

Presentations were also made by representatives of Group 4 Securitas. Rover BMW, Open University and Lewisham College from the British side, besides Ashok Leyland, IIT Chennai and Royal Enfield Motors Ltd.

NCTE Emphasises Merit for BEd Enrolment

The National Council for Teacher Education (NCTE) is reported to have expressed its concern over the growing commercialisation of teachers training and suggested that merit should form the basis of enrolment into the B.Ed. courses.

It demanded an immediate halt to the collection of capitation fees and stressed that no new applicants be admitted beyond a month after the start of the academic session.

According to a NCTE report, a large number of universities and teacher training institutions in the country are violating the enrolment norms by admitting applicants more than the stipulated number with the prime objective of earning more bucks. The unhindered enrolment of the probable teachers in B.Ed. direct or correspondence course has a direct bearing on the quality of the teachers' training effecting the standard of education being imparted to the students.

The NCTE has asserted that candidates are being admitted into the B.Ed. courses and particularly in the correspondence courses flouting recommendations of a special committee formed in 1989 to scrap the B.Ed. courses till further notice.

Taking a similar stand, the UGC Chairman in a meeting in 1992 with the Vice-Chancellors of universities conducting B.Ed. courses had emphasised that the teacher training course should not be treated as a means to generate funds.

A study conducted by NCTE recently disclosed that inadequate job opportunities drove surplus trained teachers of the teachers training institutions or teaching centres in search of a job. This has promoted nepotism and corruption in matters of admission, internal assessment of the candidates. The privately run institutions also reap a fast harvest earning hefty amounts through appointment of teachers

Teacher Fellowships for LOKSHALA Programme

Bharat Jan Vigyan Jatha (BJVJ), in academic support from Maulan Azad Centre for Elementary and Social Education, Department of Education, University of Delhi, has initiated the LOKSHALA programme with an alternative vision on universalisation of elementary education.

The University Grants Commission (UGC) has granted 12 teacher fellowships to recognised teachers of universities/colleges to work with BJVJ on full-time basis to assist and strengthen the LOKSHALA initiative. Six Fellowships are now available and applications are invited from candidates located anywhere in India.

The broad areas of work are : i) Building up of a state-level initiative in universalisation of elementary education and/or other development activities; ii) Building up and becoming part of a resource group engaged in such activities; and iii) Building up local initiatives anywhere in India.

The candidate may belong to any academic discipline; a demonstrated commitment to elementary education/social developmental action is an essential requirement.

Candidates must be confirmed teachers of any university or its affiliate colleges. All applications must be routed through proper channel as per the rules pertaining to the respective institutions.

Selected teachers would continue to receive their salary and admissible allowances from their parent institutions. The UGC will pay the basic salary and admissible allowances to a substitute teacher in place of the teacher fellow. The tenure of the fellowship is one year, extendable by another year if recommended by BJVJ.

Applications on plain paper along with (a) Bio-data, (b) Biographical account of their social development activities, and (c) Description of the intended work if awarded the fellowship, duly forwarded, should be addressed to the Secretary, University Grants Commission, and sent to BJVJ-UGC Teacher Fellowship Programme, 86A, Block-22, DDA Flats, Sarai Kale Khan - II, New Delhi 110 013 so as to reach latest by 29 April 1997.

MKU Develops Hospital Waste Incinerator

A hospital waste incinerator, developed by the School of Energy, Environment and Natural Resources of Madurai Kamaraj University, was handed over to the Indian Society for Environment and Health (ISEH) by Mr. A.P. Muthusamy, Chairman, Tamil Nadu Pollution Control Board in Madurai recently.

Mr. Muthusamy felt that 90 per cent of the diseases could be prevented in a city like Madurai if the garbage was cleared daily and a considerable amount of money spent on health care services saved if hospital waste were disposed of in a safe manner. He pointed out that it was a legal requirement to get environmental clearance for hospitals, and called upon doctors to comply with the provision.

Mr. Muthusamy said the need to protect and improve the quality of the environment was gaining priority and people had been exerting pressure on the government agencies and the judiciary to constantly monitor the situation. The gravity of the problem created by the failure to carry out environment protection measures were getting highlighted, thanks to the part played by the judiciary.

He felt that the difficulty in adopting advanced technologies were the cost involved and said the development of the incinerator, a system that was relevant, easily manageable and 'within our limits,' was a good idea. The chairman called upon scientists to take this system from the laboratory to land, and gave an assurance to get 50 per cent subsidy once the incinerator was commercially produced.

Explaining how the Madurai Corporation would be burdened with the task of collecting, transporting and burning the bio-mass waste generated by about 250 hospitals in the city, Mr. Muthusamy called upon the officials to put to use the incinerator handed over o the ISEH within the shortest possible time. He lauded the incinerator as a pioneering effort and was confident that its success would encourage installation of such equipment throughout the country. He formally handed over the incinerator to Mr. M. Pandian, Deputy Mayor of the Madurai Corporation.

Prof. K. Aludiapillai, Vice-Chancellor, said the incinerator was the contribution of the university to protect the citizen's health. He regretted that good drinking water and fresh, clean air to breathe were becoming scarce commodities. In this context the designing of the incinerator could be hailed as a laudable achievement. The idea behind the design was to ensure that the hospital waste did not become a source of infection in the city. It would be disposed of in an eco-friendly manner. He pointed out that the research work undertaken in the university in various fields was oriented towards social needs and the incinerator would help avoid the ill-effects of pollution.

Dr. T.M. Haridasan, Head, Department of Bioenergy, who led the team that developed the incinerator, said hospital waste with high moisture level could be disposed of using the equipment. The device used LPG to provide initial flame to bring the temperature to 900 degree C and the bricks inside the incinerator would retain the heat and supply it to the feed for self-sustained combustion and incineration at a temperature varying from 800 to 900 degree C.

He said the preliminary warm-up time for the device was round 30 minutes and the rate of incineration was put at around 50 kg per hour and half a tonne a day. Dr. Haridasan claimed that there would be no odour during incineration and the ash generated would be disposed of by water traps. It had also been found that the exhaust gases were far below the permissible limit.

Orientation Programme for Varsity Teachers

The Academic Staff College of Himachal Pradesh University recently conducted a 4-week Orientation Programme. Inaugurating the Programme Dr. Shyam Sunder, Joint Director (Colleges), Government of Himachal Pradesh, said that for becoming effective teacher one must have four types of knowledge i.e. theoretical knowledge, practical knowledge, general knowledge and spiritual knowledge. He emphasized the orientation of mind and internal development of the personality. He asserted that when the inner self was in order, then only the outer self, the family, the neighbourhood, the nation and the world would be in order. As such, the need of the hour was the enlightenment/development of the inner self.

Prof. Yoginder Verma, Director, Academic Staff College, H.P. University, Shimla emphasised the importance of teacher as a catalyst of social change and spoke of the degradation of values in the Indian society. He also stressed the need of keeping up-to-date with the fast changing information technology in the present time.

Prof. A.S. Sethi, Coordinator of the programme stressed the need for seeking the solutions through research and inculcation of certain national values among the students.

Prof. Lokesh Koul, Dean of Education, H.P. University, also highlighted the emerging challenges for the teachers in higher education, namely, knowledge explosion, new information technology, rising expectations of the society, etc.

The programme aimed at improving the general awareness, inculcating teaching skills, and developing personality of the teachers. The needs of participants were identified through various exercises such as pre-orientation awareness test, workshops, sharing of incidents and informal interaction. In order to effect desired changes, an appropriate set of orientational techniques such as breaking the ice, warming-up, brains storming, teaching game, role playing, self-encounter, filming teaching by participants, workshop, chairing, assignments, communication game, group dynamics, multiple-quiz, etc were utilised. The teacher participants were provided maximum opportunity for interacting, reflecting and functioning in a team. Mutual cooperative and interactive learning dominated the methodology of orientation.

Evaluation and monitoring of the training interventions was a continuous process which included day-to-day participation, punctuality, behaviour, entry behaviour test, think tank, role playing, self appraisal etc.

At the concluding session, Prof. V.K. Sabharwal, enumerated a number of concerns and anxieties facing higher education, namely, unplanned and unsystematic quantitative expansion, variety of universities and their relationships, paucity of financial resources, manipulative campus politics, displaced purpose of higher education, globalisation, emerging tension between traditions and modernity, access and equality, moral crises, etc. Referring to the UNESCO's report of International Commission on Education in 21st Century (1996), Prof. Sabharwal said that the developing societies were facing the challenge of ideology of progress, economic crisis and moral crisis.

Prof Sarojini Varshney traced out need for understanding the goals of higher education. She was of the opinion that higher education must develop reflective attitude, positive self concept, autonomy and a sense of responsibility for fulfilling the societal expectations.

Prof. R.P. Singh highlighted the importance of improving teaching skills and attitudes of teachers. He strongly felt that quality teaching was not necessarily related to good background of research or academic achievement. Teaching was an art which required improvement in the capacity to learn, lecturing skills, empathy and communication skills.

18 college/university lecturers from the States of Madhya Pradesh, Maharashtra and Himachal Pradesh participated in the programme.

Seminar on Gender, Equity and Development

The Centre for Studies on Equity & Development of Gujarat Vidyapith recently organised a Seminar on Gender, Equity and Development.

The purpose of the seminar was to raise awareness of how gender played a key role in the way women and men participated in social and economic activities and to promote gender issues as a priority area. The topics discussed in the seminar included : Gender Differences in Regional Development in India; Women's Movement before and after India's Independence; Gendre Dimensions of Poverty, Women's Contribution to Nation's and State's Economy; Development of Women's Entrepreneurs; Empowerment of Women at Panchayat and other Political Levels; Women's Health : A neglected Area; Special Problems of Rural, Scheduled Caste and Scheduled Tribes Women; Educational Inequalities between Women and Men Commercialisation of Women's Indigenous Knowledge; Women, Ecology and Sustainable Development; and Problems of Working Women in Organised/Unorganised Sectors.

After detailed discussions the following points emerged :

1. There is need for access to credit for tribal women who have very little or no credit.

2. Need for education of girls through institutions devoted to the education of girls, particularly from the tribal and dalit family.

3. Need to examine the education system through which women are channelled and to revitalise different schemes of education.

4. The question of equity is very important. There is a need to establish a new type of institution to project the image of women.

5. Efforts be made to check the increasing number of women who have become drug addicts. It should be resolved through research and supportive institutions.

6. There is a need for discussion on women and peace in relation to gender equity.

7. The existing legal provision that entitles women to inherit equal share in their husband's property be strictly enforced.

8. Different social and religious groups have specific problem regarding women i.e. Muslim women suffer special difficulties in marriage and divorce due to different personal laws; Tribal societies have their own traditional values out of which it is extremely hard for women to escape; In Jain religion though in their community there is no problem of financial resources yet it is very hard to mobilise women despite the fact that she created a special institution, etc.

9. Women carry a heavy burden of work, but they did not know any government schemes which could help them reduce their work.

10. Identity of women is necessary. But how identity is shaped and what should be done to let it flourish, is a question to be examined.

11. Dr. Krishnaben Ahooja-Patel appreciated the participation of men in this seminar. She felt that they must have their own views and posed a question as to how do they view the emancipation and empowerment of women. In response they stated that instead of copying Western styles of living, women should concentrate on being Indian by following national traditions and not blindly follow Western ways. It should not be forgotten that she was responsible for men's birth, his identity and his education.

TN for Private Participation in Education

The Tamil Nadu Government proposed to regularise the functioning of arts and science colleges run on self-financing basis during the next academic year and it had nominated a high-level committee under Dr. M. Anandakrishnan, Vice-Chairman, State Council for Higher Education, to recommend the modalities for the same, said Mr. K. Anbazhagan, Education Minister. He was delivering the presidential address at the silver jubilee celebrations of Sadakathullah Appa College in Tirunelveli recently. Mr. Anbazhagan said out of the Rs. 3,000 crores earmarked for the Department of Education only Rs. 400 crores could be allocated for collegiate education, owing to various constraints. Hence the Government had to encourage private participation to cope with the increasing demand.

The recommendations of the high level committee, comprising a few Vice-Chancellors and top educationists, presented to the Government after studying the running of self-financing colleges and the seats available in them, would be implemented from the next academic year onwards.

Mr. Anbazhagan, commended Manonmanian Sundaranar

University for offering many unique courses and introducing the novel "choice based credit system" of education.

Speaking on the occasion Mr. Aladi Aruna, Law Minister said that out of the 220 universities in the country, 14 existed in Tamil Nadu, offering hundreds of subjects to impart higher education to youth. He commended Sadakathullah Appa College for doing a yeoman service for removing the veil of ignorance and illiteracy among the under-privileged and those living below the poverty line.

Dr. V. Vasanthi Devi, Vice-Chancellor, Manonmanian Sundaranar University, in her inaugural address, explained the steps taken by the University to restructure and update the syllabi by introducing many social value education courses and application oriented courses for skill development.

Goyal Prizes for Scientists

Eight scientists of the country have been selected for the prestigious Goyal prizes for 1995-96 for their contributions in frontier areas of Science. The annual prizes, instituted by Mr. Ram S. Goyal, an NRI settled in Chicago, USA carry a citation, a gold medal and Rs 1 lakh each.

The awradees are Dr R.A. Mashelkar (Director General, Council of Scientific and Industrial Research) and Dr. J.M. Khanna (Executive vice-president of Ranbaxy Research Laboratory) in the area of applied sciences; Prof S.V. Kessar (Panjab University, Chandigarh) and Prof C.L. Khetarpal (Indian Institute of Science, Bangalore) in the area of chemical sciences; Prof Asis Datta (Vice-Chancellor, Jawaharlal Nehru University, New Delhi) and Prof Satish Maheshwari (International Centre for Genetic Engineering and Biotechnology) in the area of life sciences; and Prof Virendra Singh (Director, Tata Institute of Fundamental Research, Mumbai) and Dr. S.S. Kapoor, (Director, Physics Group), Bhabha Atomic Research Centre, Mumbai.

Trends in Process Control

A short term course on "Recent Trends in Process Control" was recently organised by USIC. The course was inaugurated by Dr. M.P. Kapoor, Director, T.I.E.T., Patiala. Shri V.K. Seth, Chief Engineer, Thermal Design, PSEB Patiala was the chief guest. Mr. V.K. Seth in his keynote address emphasised the need for industry-institute interaction.

The topics covered in the course included : Introduction and Basics of Process Control, Conventional and Advanced control schemes, Computer control, Distributed control, Programmable logic controllers, Network commmination, GPIB/RS 232 interface, Field Bus.

During the course of the programme it was suggested that (i) More experts from industry be associated for delivering lectures; (ii) Summary of course should be sent to HRD & TRG managers of different industries for motivating them to send their engineers in future to such courses; (iii) Video films of industries employing latest methods in process control should be shown; and (iv) Common problems prevailing in industry should be discussed.

News from Agricultural Universities

University-Industry Linkage

Prof. J.B. Choudhary, Vice-Chancellor of the Haryana Agricultural University, stressed the need for developing strong link between university researchers and industrialists to give new thrust to the research. He was participating in the seminar on "Processing and marketing of agro products," organised by the university in collaboration with the PHD Chambers of Commerce and Industry in Hisar recently. He said the research programmes should be reoriented in view of the farmers socio-economic needs and global requirements.

Mr Binay Kumar, chief of the Chamber, said the northern region had a strong and diversified agricultural base which offered immense investment opportunities. He said only 1.3 per cent of the fruits and vegetables produced in the country were used by the processing industry. This figure was in sharp contrast to the figure of 30 per cent in Thailand, 70 per cent in Brazil and the USA and 83 per cent in Malaysia. However, the capacity for fruit and vegetable processing had grown steadily.

He stated that the food processing sector ranked fifth in contribution to the value addition and employed 19 per cent of the total industrial force but the industry accounted for only 5.2 per cent of the total investment.

A committee of the union government had recommended that out of the 30,000 rural primary markets which remained outside the ambit of market regulations, at least 15,000 should be covered during the Eighth Plan, Mr. Binay Kumar said.

The Chamber chief said that "if we can produce food commodities without using chemicals, it will boost our entry in the global market."

In all nine papers were presented on the subject at the seminar in which over 100 scientists and businessmen participated.

ICRISAT Silver Jubilee

The International Crops Research Institute for Semi-Arid Tropics, which has been rendering yeoman service to the cause of the farmers worldwide, is celebrating its silver jubilee in November this year.

According to Mr F R Bidinger, Principal Scientists in Agronomy Research Division, the organisation was set up in the backdrop of national uncertainty with severe food shortage in '70s. Since its inception in 1972, it has been carrying out research work with an emphasis on southern Asia and sub-Saharan Africa.

"The remarkable achievement of the organisation has been the improvement of six crops such as finger millet, pearl millet, sorghum, groundnut, pigeonpea and chickpea and conserving their genetic resources," he said.

The ICRISAT is also working for social causes like alleviation of poverty, proper land use and food security.

Though it is not directly involved in poverty alleviation, the research priorities were framed to benefit the poorer sections of the society, said the assistant director general, Mr. S Parthasarathy.

News from UGC

Countrywide Classroom Programme

Between 24th and 30th April, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

24.4.97

"DNA Damage and Longevity"
"New Interactions in Higher Education"

26.4.97

"The Cosmic Quest"
"Underwater Target Search"
"Perceptions of Gender"

27.4.97

"Polo: The Royal Sport-I"
"Dyestuffs : Return to Nature"
"Careers at Crossroads: The Trauma of Entrance Tests"

29.4.97

"The Celestial Power Plant"
"Lucknow: The City of Monuments"
"Ayurveda: Science of Life"

IInd Transmission

1.00 p.m. to 2.00 p.m.

24.4.97

"Computer Networks and Communication"
"The Indian Tribes"
"*Blooming Bud: Priyanka* Sacheti"

25.4.97

"Finger Prints"
"*A Discussion on Policy for* Women-I"
"Plants in our Neighbourhood-I"

26.4.97

"Sports Journalism"
"Understanding Cinema-XIV: Scene Analysis-I (Our Daily Bread)"

27.4.97

No Telecast

28.4.97

"Study of Coupled Oscillator-II"
"Computerised Cheque Clearing"
"Entrepreneurs and Rural Marketing"

29.4.97

"Water Quality Management-III : Water Purification System"
"Ways of thinking -Sep-IV: Sphere of Sound"
"Save Paper"

30.4.97

"Buddhism in Andhra Pradesh-IV: Buddhist Architecture in Andhra Pradesh"
"Little Valley of Kings-I"
"Plant Disease-II"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

25.4.97

"पाश्चात्य संगीत की एक रीति"

28.4.97

"औद्योगिक क्षेत्र में मानवीय संबंध – 3"

"एमनीओटस में बाह्य कंकाल"

30.4.97

"दो तीन का नियम – 3"
"पुष्पित कांटे"

BOOK REVIEW

Solar Energy for Thermal Applications

Sartaj S. Mathur*

S. P. Sukhatme. Solar Energy: Principles of Thermal Collection and Storage. 2nd Edn. New Delhi, Tata McGraw Hill, 1996. Pp. xvii+426. Rs. 120.00

This is the second revised edition of the book first published in 1984. The book is primarily concerned with the collection and storage of solar energy for thermal applications and is based on the teaching and research experience of the author. A number of solved examples, using Indian data have been included in the book to enhance its relevance to the applications of solar energy in the country.

The chapter on solar energy options in the first edition has been split up into two, one dealing with solar thermal applications and the other with the remaining forms of solar energy utilisation, which forms the last chapter of the book. In addition, basic concepts of economic analysis have been included as a new chapter. A number of problems have been added in some of the chapters.

Talking about the new chapters first, the coverage on economic analysis is reasonably adequate and clearly explains some of the various economic parameters of interest, in relation to the basic cost, operational and maintenance expenses etc, to assess the economic viability of the system. I however fail to appreciate the splitting of sections 9.1 and 9.2 which could have been combined under a common heading of "Economic Parameters". Also, the payback period can be defined in a number of different ways. The simple definition used here gives a favourable economic viability of renewable energy systems which can be misleading. It may however be added that some solar thermal devices are on the threshold of being competitive with conventional forms of energy, particularly electricity.

The coverage for photovolaitic systems is very lucid, particularly for non-physics students. It gives a comprehensive summary of the current trends and status of this technology.

However, one has to be very careful in explaining the basic concepts of semiconductor physics particularly to non-physics students. The description of a semi-conductor as one which has its valence band full and few electrons in the conduction band is not satisfactory. Semiconductors are basically insulators. Some of them start conducting at elevated temperatures while some other may do so with the addition of impurities. A more detailed treatment is necessary distinguishing between intrinsic and extrinsic semiconductors and introducing the concept of Fermi level in a simple way.

This chapter also gives an account of the basic concepts of utilization of wind energy, biomass, wave energy and ocean thermal energy conversion. More detailed treatment has been given to wind energy utilization which is understandable in view of its potential.

The main focus of the book, namely, thermal application of solar energy, has been covered extremely well. Concepts are illustrated with the help of well explained selected solved problems.

As a physicist, I am deeply concerned that a number of books on solar energy, while discussing selective surfaces, give an erroneous impression that emissivity of a black body at flat plate collector temperatures (about 350K) in the long wave length region (infra red) is higher than the emissivity of the sun. This book also makes the same mistake (Fig.4.12a). The fact is that black body radiation is given by the Planck's radiation formula and the emissivity of a black body for a given wavelength is always greater at a higher temperature. The fact, however, is that of the total radiation coming from the sun, a smaller fraction falls in the infra red region, while at lower temperatures, relevant for a flat plate collector, most of the energy radiated falls in this region.

The book is very strong in the concepts of engineering which have been presented rather lucidly. However, revision of some of the scientific basis necessary to provide a proper foundation for solar energy utilization will greatly improve the quality of the book. One also hopes that in future editions the book adheres to the standard international systems of units throughout the book.

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* *Centre for Energy Studies, Indian Institute of Technology, New Delhi - 110 016.*

P.D. AGARWAL FOUNDATION

1, Prabhu Dayal Marg, Sanganer Airport, Jaipur 302 011

Announces

PD AGARWAL-TCI AWARDS FOR DOCTORAL RESEARCH IN MANAGEMENT

1997

The P.D. Agarwal Foundation has been created in the memory of Shri P.D. Agarwal who built up the Transport Corporation of India-Bhoruka Group of Companies and a number of *educational and philanthropic institutions in India.*

The P.D. Agarwal Foundation is happy to announce that, it proposes to give about ten awards to doctoral students in management to enable them to undertake and complete their field work. Each award will be worth a maximum of Rs. 20,000.

Doctoral candidates in management at any Indian university/institution with a recognised Ph.D. programme or equivalent are eligible to apply. For details on how to apply send a self-addressed, stamped (Rs. 2.00) envelope to Prof. Rishikesha T. Krishnan, Corporate Strategy and Policy Area, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore-560 076.

The last date for receipt of applications complete in all respects is August 16, 1997.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Shanti Swarup Bhatnagar Prizes in Science and Technology for 1997
(Last Date for receiving Nominations extended)

It is to inform all concerned that the forms for making nominations for the **Shanti Swarup Bhatnagar (SSB) Prize 1997** had been made available to the Heads of the Universities and Academic Institutions sometime ago. The last date for receiving nominations has been extended to **30 April 1997.**

The SSB Prizes are given for research contributions made primarily in India during the last five years. The age of the nominees should not be more than 45 years as on December 31, 1996. The SSB Prizes, each of the value of Rs. 1,00,000 (Rupees One Lakh only), are awarded for the notable and outstanding research, applied or fundamental, in the following disciplines : (1) Biological Sciences; (2) Chemical Sciences; (3) Earth, Atmosphere, Ocean and Planetary Sciences; (4) Engineering Sciences; (5) Mathematical Sciences; (6) Medical Sciences; and (7) Physical Sciences.

Nominations should be sent as per the prescribed proforma (25 copies) along with one set of reprints of significant publications of last 5-years period to the **Head, Human Resource Development (HRD) Group, Council of Scientific & Industrial Research, CSIR Complex, Pusa, New Delhi - 110 012.** The proforma for nomination may be obtained from the above address.

CLASSIFIED ADVERTISEMENTS

WANTED LECTURER

(EDUCATION)

Applications are invited for the Post of Lecturer preferably with following Special Methods at their B.Ed. level : Hindi, Marathi, Gujarati & Geography (any two of those) in Smt. Kapila Khandvala College of Education. (Minority Institution) Juhu Road, Santa Cruz (West), Mumbai - 400 054, from July, 1997. For the post(s) Qualifications and Pay Scales are as Prescribed by the University of Mumbai from time to time. The details of Qualifications, Pay scales, and Allowances will be supplied on request from the applicants. Applicants already employed shall forward their applications through proper channel. Applicants shall account for breaks, if any, in their academic career. **Applications with copies of statements of marks at all examinations** should be sent to the Principal on or before 26th April, 1997.

PRINCIPAL

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY

LONERE 402 103, TAL. MANGAON, DIST-RAIGAD

Applications are invited before 15th **May, 1997** for the following posts in this University for Post-Graduate, Under-Graduate and Diploma courses.

Sr. No. Name of the Post

TEACHING POSTS

01. Professors of Petrochemical/Chemical/Mechanical / Petroleum / Electrical / Electronics / Computer Engineering / Management
02. Asstt. Professors in Petrochemical / Chemical / Mechanical / Electrical/ Electronics Engineering / Management.
03. Heads of Chemical / Petrochemical/ Polymer & Plastic / Instrumentation / Electrical / Electronics / Computer Engineering Departments.
04. Workshop Superintendent for Diploma courses in Institute of Petrochemical Engineering under this University.
05. Lecturers in Mechanical / Chemical/ Electrical / Electronics / Petrochemical / Computer Engineering / Management / Physics / Chemistry/ Mathematics / and English for Degree Courses.
06. Lecturers in Mechanical / Chemical/ Electrical / Instrumentation /. Polymer & Plastic / Electronics / Petrochemical / Computer Engineering / Management / Physics / Chemistry / Mathematics and English for Diploma Courses.

NON-TEACHING POSTS

01. Registrar
02. Dy. Registrar
03. Controller of Examinations
04. Administrative Officer
05. Placement & Training Officer
06. Project Officer for Community Polytechnic.

The qualifications, experience and the Scales of Pay will be as per the rules of AICTE and Government of Maharashtra as the case may be for teaching and non-teaching posts.

The desirous and eligible candidates should submit their applications addressed to the Registrar of this University in their own handwriting giving full details of qualifications, experience, present employment etc. before **15th May, 1997.**

Persons in Government or Semi-Government *employment should forward their* applications through proper channel.

Dr. D.P. Mishra
REGISTRAR

ST. THOMAS COLLEGE, PALA

ARUNAPURAM P.O., PIN - 686 574.

WANTED

Applications are invited for the following posts of Jr. Lecturers (Pre-degree Category)/Lecturer (UGC Category) under Open/Community (Roman Catholic) quota.

Statistics:- 1 UGC, **Physics:-** 1 Leave vacancy in PDC, **Chemistry & Commerce:-** 1 each in PDC.

Age:- As prescribed by the Govt./ Uty.

Qualfns:- (i) UGC - Masters Degree in the concerned subject with atleast 55% marks & pass NET by the UGC/CSIR or its equivalent.

(ii) PDC:- Masters Degree in the concerned subject with atleast 50% marks & B.Ed. Apply within 30 days from the date of this notification.

Application forms can be had from the college office on payment of Rs.150/-

PRINCIPAL

Dempo Charities Trust

DHEMPE COLLEGE OF ARTS & SCIENCE

P.O. BOX NO. 222
PANJIM, GOA - 403 001.

Applications are invited for the posts of **Lecturers** in the following subjects and **Librarian.**

1) Chemistry (Full Time)
  - Resv. for SC - advt for 3rd time
  - 1 Resv. for ST - advt. for 3rd time
  - 1 Resv. for SC - advt. for 1st time
  - 1 Resv. for ST - advt. for 1st time
2) Physics (Full Time)
  - 1 Resv. for SC - advt. for 1st time
3) Botany (Full Time)
  - 1 Resv. for SC - advt. for 3rd time
  - 1 Resv. for ST - advt. for 1st time
4) Zoology (Full time)
  - 1 Resv. for OBC - advt. for 1st time
  - 1 Resv. for SC - advt. for 1st time

  Zoology (Part Time)
  - 1 Resv. for SC - advt. for 1st time
5) Mathematics (Full Time)
  - 1 Resv. for SC - advt. for 1st time
6) Konkani (Full Time)
  - 1 Resv. for SC - advt. for 1st time
7) Philosophy (Full Time)
  - 1 Resv. for SC - advt. for 1st time
8) Psychology (Full Time)
  - 1 Resv. for SC - advt. for 2nd time
  - 1 Resv. for ST - advt. for 1st time
9) French (Part Time)
  - 1 Resv. for ST - advt. for 1st time
10) Portugues (Lecture Basis)

-1 Resv. for SC - advt. for 1st time

11) Computer Awareness (Full Time)
-1 Resv. for SC - advt. for 3rd time

12) Economics (Full Time)
- 1 Resv. for ST - advt. for 4th time

13) History (Full Time)
- 1 Resv. for ST - advt. for 4th time

14) Librarian (Full Time)
-1 Resv. for SC - advt. for 2nd time

N.B. :-

1) For the reserved posts advertised for the first time, if no suitable candidates are available from the above mentioned categories, candidates from general category will be considered for appointment temporarily for one year.

2) **Academic Qualifications:**

A) For Lecturer's posts

i) Master's Degree in the relevant subject (i.e. minimum 6 papers) with at least 55% marks or its equivalent grade and good academic record and all other conditions laid down by UGC.

ii) The candidates for Lecturer's posts must have passed the State/National Eligibility Test for Lecturers conducted by UGC/CSIR or similar Tests accredited by UGC. In case, candidates having passed NET/SET are not available or found unsuitable otherwise, other suitable candidates would be appointed on purely temporary basis.

B) Minimum qualifications for LIBRARIAN

i) Qualifying the national level test approved by UGC. Desirable: M.Phil/Ph.D. degree in Library Science/Inf. Serv./Doc. Archives and Manuscript Keeping.

ii) Master's degree in Library Science/Information Science/Documentation or an equivalent professional degree with atleast 55% marks or its equivalent grade plus a consistently good academic record.

OR

Master's Degree in Arts/Science/Commerce or equivalent degree with atleast fifty-five per cent marks or its equivalent grade with Bachelor's degree in Library Science/Information Science Documentation or an equivalent professional degree with at least fifty-five per cent marks or its equivalent grade plus a consistently good academic record.

3) Scales or pay (For Lecturer as well as Librarian):
Rs. 2200-75-2800-100-4000 plus admissible allowances. Persons who are already employed shall send their applications through proper channel. Break in service, if any, should be accounted for.

4) True-copies of Marks Statements of all public examinations passed, should be enclosed.

5) Applicants from the reserved categories should attach a certified copy of Caste Certificate.

6) Interested candidates should apply giving full details, viz. Full Name, Address, Date of Birth, percentage of marks from SSC onwards, subjects offered at all public exams, teaching experience, if any, and any other details.

7) *Applications complete in all respects, should reach the Principal* **within 15 days** from the date of publication of this advertisement.

Date : 27/3/97

Dr. G.N. Mishra
PRINCIPAL

ALPHONSA COLLEGE, PALA
ARUNAPURAM P.O.
PIN - 686 574
KOTTAYAM DIST. KERALA

WANTED

1. **Lecturer in Physical Education** - 1 (Permanent) U.G.C. - Open Merit

Qualification and age as prescribed by the University/Government. Those with the prescribed qualification who had applied in response to our earlier advertisement need not apply again.

2. **Mechanic** - 1 Permanent. VIII Standard with I.T.I. qualifications (I.T.I. Electricals/Electronics/Instrumentation will be preferred) Age between 18 and 35 as on 1st January '97.

Application form - Lecturer - Rs. 120, Mechanic - Rs. 50 can be had from the college office. Apply **within one month** from the date of this notification.

PRINCIPAL

ASSAM UNIVERSITY : SILCHAR

(A Central University constituted under Act XIII of 1989)
Employment Notification
No.AUP-16/97/1
dated 27 March 1997

The Assam University invites applications in the prescribed form for the following posts :-

1. Professor (3 Posts) : One each in Computer Science, Commerce & Linguistics.
2. Reader (6 Posts) : Two in Computer Science, one each in Arabic, Mass Communication, Social Work and English.
3. Lecturer (5 Posts) :- One each in Computer Science, Chemistry, Bengali Math. & Arabic (Posts of Lecturer in Computer Science, Math and Arabic are reserved for SC/ST category)
4. Registrar : One post
5. Hindi Translator : One post
6. Semi-Professional Assistant : One post (The post is reserved for ST candidate)

Scale of Pay :

1. Professor/Registrar : Rs. 4500-150-5700-200-7300/-
2. Reader : Rs. 3700-125-4900-150-5700/-
3. Lecturer : Rs. 2200-75-2800-100-4000/-
4. Hindi Translator/Semi-Professional Asstt. : Rs. 1400-40-1800-EB-50-2300/-

Eligibility Criteria :

For Professor, Readers and Lecturers as per UGC norms.

Registrar : a) A Post-graduate degree with at least 55% marks or its equivalent grade;

b) At least 15 years of experience as Lecturer/Reader of which 8 years should be in the Reader's grade with experience in educational administration;

OR

Comparable experience in research establishments and other institutions of higher education;

OR

15 years of administrative experience of which 8 years as Deputy Registrar or an equivalent post.

Hindi Translator : A good Master's degree in Hindi with 3 years experience in official translation including translation of scientific matters from English to Hindi and Vice-Versa. Adequate knowledge in English is essential.

Semi-Professional Asstt. : BA/BSc with *BLibSc/Certificate in Library Science.*

Desirable : i) Good speed in typing

ii) Experience of work in College/University Library.

How to Apply :

1. Application forms and detailed eligibility criteria can be had on payment of Rs. 15/- by cash or by bank draft from Personnel Section. Request for application form should also be accompanied by self-addressed stamped envelope of size 23 x 10 cm.
2. The last date of collection of form is 05.05.1997.
3. Completed application forms alongwith application fee of Rs. 50/- (Rs. 25/- for reserved category) should be addressed to The Registrar, Assam University, P.B. No. 63, Silchar-788001.
4. Last date of receipt of application is 12.05.1997.
5. Bank drafts should be drawn in favour of Finance Officer, Assam University payable at S.B.I., REC Campus, Silchar (Code No. 7061).

The University reserves the right to negotiate with suitable person who may not have applied formally. The University also reserves the right to fill up or not to fill up any post and to call only a limited number of shortlisted candidates for interview.

The Assam University is a newly established teaching-cum-affiliating Central University which is now functioning from temporary accommodations. The selected teachers, officers and staff are expected to brave the initial inconveniences to take up the challenge of providing a strong academic foundation to the University with conviction, confidence and creativity.

S. Sengupta
REGISTRAR

GOA VIDYAPRASARAK MANDAL'S

SHRI GOPAL GOVIND POY RATTURCAR

COLLEGE OF COMMERCE AND ECONOMICS

P.O.B. NO. 102

PONDA - GOA 403 401

Applications stating full name, address, age with date of birth, educational qualifications (from S.S.C. and onwards with marks and percentage secured) and teaching experience etc. are invited for the following posts of Lecturers for the academic year 1997-98.

Sr. No.	Name of the post	No. of posts	*Reserved for*	*Post advertised for the*
1.	Full-time lecturer in Commerce	1	O.B.C.	
2.	Full-time lecturer in Commerce	1	S.C.	Fourth time
3.	Full-time lecturer in Commerce	2	S.C.	Third time
4.	Full-time lecturer in Economics	1	S.C.	Second time
5.	Full-time lecturer in Commerce	2	S.C.	Second time
6.	Full-time lecturer in Computer Awareness	1	S.T.	First time

For all the above said posts of lecturer from Sr. No. 1 to 5 candidates belonging to the categories as mentioned above should only apply. However in case of post at Sr. No. 6 above, if no suitable candidate is available from the above mentioned category, candidate from General Category will be considered for appointment temporarily for one year only.

ALL THE POSTS ADVERTISED ABOVE WILL BE FILLED ONLY IF WORK-LOAD WARRANTS.

Qualifications : For all the posts at Sr. No. 1 to 5 :

1. Master's degree in the relevant subject (with minimum six papers) with at least 55% marks or its equivalent grade and good academic record.

For Post at Sr. No. 6 above :

(a) First class B.E./B.Tech. in Computer Science or Electronics having consistently good academic record with two years experience of teaching/research/industry.

OR

(b) M.E./M.Tech. in Computer Science or Electronics with 55% marks and good academic record.

OR

(c) M.C.A. or M.Sc. in Computer Science or Electronics with 55% marks and good academic record.

OR

(d) M.Sc. Statistics or Mathematics with 55% marks and good academic record with exposure to Computer Science.

Candidates for all the above posts should have cleared the Eligibility Test for lecturers conducted by U.G.C./C.S.I.R. or a similar test accredited by the U.G.C. If candidates having passed the said Eligibility Test are not available, candidates fulfilling other conditions would be appointed on purely temporary basis.

Pay Scales, allowances and other service conditions as per the rules, ordinances and statutes of Goa University, U.G.C. and rules of Goa Government.

Candidates should account for breaks if any, in the academic career. Those already in service must send their applications through proper channel. Complete applications in all respects along with Certified Zerox copies of the mark-lists for all public examinations from S.S.C. and onwards, caste certificate if belonging to O.B.C./S.C./S.T. category, from competent authority, should reach the undersigned within 15 days from the date of publication of this advertisement.

A. G. Junde
PRINCIPAL

ST. DOMINIC'S COLLEGE,
KANJIRAPALLY
PARATHODE P.O. 686 512
KOTTAYAM DT. KERALA
WANTED

1. Junior Lecturer (Pre-Degree) in Botany - Substantive Vacancy 1 - Open Merit
2. Junior Lecturer (Pre-Degree) in Economics - Substantive Vacancy 1 - Open Merit
3. Junior Lecturer (Pre-Degree) in Politics - Substantive Vacancy 1 - Open Merit

Age and Qualifications :

As per Government and University rules and regulations Appointees will not have any claim for appointment to the vacancies in the UGC Scheme. They shall be prepared to teach in the Pre-degree level and they will be included in the Pre-Degree category.

Applications in the prescribed form can be had from the college office on payment of Rs. 100/-, should reach the undersigned within 30 days of this notification.

MANAGER

ALAGAPPA UNIVERSITY
KARAIKUDI

Advertisement No. APPT/AUCE/97

Applications are invited from eligible candidates for the post of Principal in Alagappa University College of Education

Prescribed Qualification

1. Minimum 16 years of Teaching/Research Experience after Post Graduation.
2. Ph.D. Desirable.

(Open Competition)

Scale of Pay : Rs. 3700-125-4950-150-5700

Application forms along with the instructions can be had from the Registrar, Alagappa University, Karaikudi on payment of Rs. 100/- by means by Demand Draft drawn in favour of the Registrar, Alagappa University, payable at Karaikudi.

Candidates who are already in service should send their applications through proper channel so as to reach the Registrar on or before the last date.

Filled-in application should reach the Registrar on or before 20th June 1997.

REGISTRAR

BEANT COLLEGE OF ENGINEERING & TECHNOLOGY, GURDASPUR

(Established by the Govt. of Punjab)

Applications are invited for the following posts for Beant College of Engineering & Technology, Gurdaspur. The College has been registered as a Society under the Societies Registration Act, 1860. Its affairs are administered through a Board of Governors and the college is fully funded by Punjab Government. The posts carry D.A. and other allowances admissible under the college Bye-Laws. Application should be submitted on prescribed proforma which can be had from the office of the undersigned on the counter for Rs. 30/- and by post for Rs. 40/- through demand draft in favour of the Principal, and payable at Gurdaspur upto 08.05.1997.

1. **Training and Placement Officer** - 01 (Gen)

   Pay scale Rs. 4500-7300/-

   Essential Qualifications : Ph.D. with first class Bachelor's degree or Master's Degree in Engineering/Technology.

   Experience : Ten years distinguished experience in industry/research/teaching out of which five years must be at the level of Assistant Professor or equivalent.

   Note: Candidates from industry/profession with recognised professional work of high standard recognised at National/International level equivalent to Doctorate would also be eligible even if they are not holding a formal Ph.D. but have atleast first class Master's Degree in Engg./Technology.

2. **Professors** : 06 (Gen.-04, SC/ST-02) Pay Scale Rs. 4500-7300/-

a. Mechanical Engineering	- 01
b. Production Engineering	- 01
c. Computer Sc. & Engineering	- 01
d. Applied Physics	- 01
e. Applied Chemistry	- 01
f. Humanities	- 01

Essential Qualifications : Ph.D. with first class bachelor's degree or Master's Degree in appropriate Branch of Engineering/Technology or Ph.D. with first class Bachelor's degree or *Master's Degree in appropriate* branch for teaching posts in Humanities and Sciences.

Experience : Ten years distinguished experience in teaching/industry/research out of which five years must be at the level of Asstt. Professor or equivalent. Candidates from indus-

JUST RELEASED

Handbook of Distance Education (Updated upto April 1997)	**Rs. 75/-**
Scholarships for Study Abroad & At Home	**Rs. 80/-**
Bibliography of Doctoral Dissertations	
Social Sciences & Humanities - 1992	**Rs. 1,000/-**
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Address Enquiries to:

Joint Director *(Publications)*
Association of Indian Universities
AIU House, 16 Kotla Marg, New Delhi - 110 002
Telephones: 3230059, 3232429, 3233390, 3232305
Telex: 31-66180 AIU IN GRAM : ASINDU Fax: 011-3236105

try/profession with recognised professional work of high standard recognised at national/international level equivalent to doctorate would also be eligible.

3. **Assistant Professors** : 09 (Gen.-05, SC/ST-03, Ex.SM-01) Pay Scale Rs. 3700-5700/-

   a. Mechanical Engineering - 02
   b. Chemical Engineering - 01
   c. Computer Sc.& Engineering - 01
   d. Applied Chemistry - 01
   e. Applied Physics - 01
   f. Applied Mathematics - 02
   g. Humanities - 01

   Essential Qualifications : Ph.D. in appropriate branch with first class Master's Degree in case of teaching posts in applied sciences and humanities or first class in Master's Degree in appropriate branch for the posts in engineering/technology.

   Experience : Five years experience in teaching/industry/research at the appropriate level.

4. **Lecturers** : 17 (Gen.-06, SC/ST-07, BC-02, Ex.SM-02) Pay Scale Rs 2200-4000/-

   a. Mechanical Engineering - 04
   b. Production Engineering - 03
   c. Chemical Engineering - 02
   d. Computer Sc. & Engineering - 03
   e. Applied Chemistry - 02
   f. Applied Physics - 01
   g. Applied Mathematics - 01
   h. Humanities - 01

   Essential Qualifications : First class bachelor's degree in appropriate branch of engineering/technology or first class master's degree in appropriate branch of study in case of teaching posts in humanities and applied sciences.

5. **Computer Programmer** - 01 (General) Pay Scale Rs. 2200-4000/-

   Qualifications & Experience : First class post diploma course/post graduate diploma course from a recognised Board/University. Five years of experience in operating computer systems, writing computer programmes for FORT-RAM. BASIC, COBOL, PASCAL, C", d/BASE etc. MCAs with 5 years' experience are also eligible.

Note : In the event of suitable SC/ST candidates not being available, posts might be filled with candidates from open category. Only shortlisted candidates will be called for interview

Number of posts may be increased or decreased. Actual first-class-rail/Delux-bus fare for the shortest route will be paid to the candidates called for interview from out stations to the place of interview. A.C. bus fare is also permissible to the candidates for the posts of Professor. Actual second class rail/ordinary bus fare for the shortest route will be paid to the candidates for the position of Lecturers. Payment will be made only on the production of actual receipts.

Candidates in service should apply through proper channel. An advance copy with requisite fee and supporting documents should reach the college office before the last date.

Dr. J. K. Sharma
PRINCIPAL

Familiarise Sanskrit with
THE SANSKRIT BEGINNER
a neo-classic method by
Veeyes Idaykidath
Rs. 50 (Rgd postage free)
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DEPARTMENT OF SCIENCE & TECHNOLOGY

INDO-HUNGARIAN COOPERATION IN SCIENCE & TECHNOLOGY

CALL FOR JOINT PROPOSALS

Department of Science and Technology (DST), Government of India invites proposals from Indian researchers/institutions for collaborative R&D work with Hungarian scientists/institutions, under bilateral Indo-Hungarian Programme of Cooperation for the period 1998-99. The project proposals should be covering such areas/topics which are ongoing priorities vis-a-vis the proposing institution/the nodal ministry/ the national programmes with a view to supplement/complement/accelerate ongoing efforts in science and technology in India.

The financial support in these collaborative projects would be generally limited to funding of exchange visits. *In exceptional cases, project funding towards consumables/contingencies may be considered.* Hence, the necessary infrastructure required for implementing the project in terms of equipment, manpower and other backup support of the implementing institution should be available with the proposer.

Application Procedure :

1. *The application formats may be obtained from :*

   Shri G Padmanabham,
   Principal Scientific Officer,
   Indo-Hungarian Programme Office,
   International Division, Department of Science & Technology,
   Technology Bhavan, New Mehrauli Road,
   New Delhi - 110 016.

2. **Only those applications which are duly signed by the Indian and Hungarian project coordinators and endorsed by their respective institutions would be acceptable.**

3. The Indian proposer should request his/her counterpart in Hungary to submit the same application form in Hungary (address given on the project format).

4. **The project proposals complete in all respects should be submitted at the above address latest by May 28, 1997.**

POSTGRADUATE INSTITUTE OF MEDICAL EDUCATION & RESEARCH, CHANDIGARH

ADMISSION NOTICE NO. 45/97/Acad.

LAST DATE FOR RECEIPT OF APPLICATION FORMS **5.5.1997**

Applications on the prescribed form are invited for the following postdoctoral, postgraduate courses and Ph.D. programme for the academic session starting from 1st July, 1997

1. First Year Junior Residents (MD/MS courses)

	Gen	**SC/ST**	***Rural Area Services***	***Deputed/ Sponsored***	**Foreign National**
Anaesthesia	4	1	-	1	2
Comm Medicine	3	1	1	1	-
Dermatology	1	1		1	1
E N T	2	1		1	1
Medicine	4	1		1	1
Obst. & Gynae	3	1	-	1	-
Ophthalmology		-	-	2	1
Orth. Surgery	1		-	2	-
Paediatrics	4	1	1	2	1
Psychiatry	2	-	-	1	1
Radio-diagonsis	1	1	-	1	1
Radiotherapy				1	-
Surgery	8	3	1	2	2
Microbiology	3	1	-	1	-
Pathology	4	1		1	1
Pharmacology	1	1		1	1
II MDS (Pedodontia & Preventive Dentistry)					
	2	-	-	-	-
MDS (Orthodontics)	2		-		-
III First Year Junior Residents (House Job) for Oral Health Sciences					
	6	2		-	-
The candidates who are completing their internship after 30.6.97 are not eligible					
IV Senior Residents (for DM/M Ch courses)					
Cardiology	3			3	-
Endocrinology	2			2	-
Gastroenterology				2	
Nephrology	3			2	-
Neurology	1			3	-
Neonatology	2				-
Cl. Pharmacology	1			2	-
Pulm. Medicine	2			1	-
Cardiovascular & Th. Surgery	2			2	-
Neurosurgery	2			2	-
Paed. Surgery	4			2	-
Plastic Surgery	1			2	
Urology	3			2	-

Upper age limit as on 1.7.1997 should not be more than 36 years for general candidates and 41 years for candidates belonging to Sch. Castes/Tribes and Ex-Servicemen and commissioned Officers including ECO/SSC Officers who have rendered at least 5 years military service and are *released on satisfactory completion of assignment.* No upper age restriction for sponsored/deputed candidates.

Candidates due to appear in MD/MS examination during April/May 1997 can also apply. They will be admitted to the entrance test only if they furnish *the result of their examination from the University/Institute con*cerned at least two days before the entrance test including the approval of their thesis.

VI) **Ph.D Programme**
*Biochemistry, Biophysics, Community Medicine, Dermatology, En*docrinology, Exp. Medicine & Bio Technology, Gasteroentrology, Immunopathology, Medical Microbiology, Paediatrics, Parasitology, Pharmacology, Psychiatry, Plum. Medicine, Radio-Therapy, Paed Surgery

VII) M Sc. Medical Technology (Pathology) with Immunopathology or Cytology or Morbid Anatomy as special subject

VII) M Sc. Medical Technology (Microbiology) with Bacteriology and Mycology or Parasitology or Virology as special subject

VIII) M Sc. Medical Technology (Pharmacology & Physiology)

IX) M Sc. Medical Technology (Radiology) with Radiotherapy as special subject

X) M Sc. Medical Technology (Bio-Chemistry)

XI) M Sc. (Speech & Hearing) course

XII) M Sc. Bio-Chemistry 5 (General-4, SC/ST 1)

XIII) M Sc. Pharmacology - 3 (General-2, SC/ST 1)

XIV) M Sc. Medical Bio-technology-7 (General-5, SC/ST-2)

GENERAL INFORMATION

1. For all courses, where MBBS/BDS is an eligible requirement, the candidates who have made more than one attempt (i.e. have more than one failure, compartment or reappear) during their MBBS/BDS course, are not eligible. For DM/M.Ch. courses, the candidates who have made more than one attempt in MBBS or MD/MS career are not eligible. However, those belonging to Sch. Castes/Tribes, with upto two attempts in their MBBS/BDS MD/MS career will be eligible.
2. The number of seats wherever indicated are provisional and are subject to change without any prior notice.
3. The courses at categories VI to XI above are only for sponsored/deputed candidates.
4. A candidate applying for more than one subject/course except category I is required to submit separate application complete in all respect for each subject/course.
5. Application forms alongwith prospectus (Brochure of information) are available from the office of the undersigned either personally on payment of Rs. 150/- at *the counter (Kairon Block) from* 10.30 A.M. to 11.30 A.M. and from 2.30 P.M. to 3.30 P.M. on all working days except Saturdays (On Saturdays forms will be available from 10.30 A.M. to 11.30 A.M.) or by post for which for request must be accompanied with a self addressed envelope of size (23 x 10 cms) bearing postage stamps of Rs. 7/- and **Bank Draft/Postal orders for Rs. 150/- drawn in favour of the Director of the Institute**

NOTE. No request for the supply of form by post will be entertained after 30.04.1997

J.D. Wig
Officer Incharge
(ACADEMIC SECTION)

UNIVERSITY NEWS, 35(15), APRIL 14, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL–11106/97

"Freedom implies not only emancipation from political bondage
but also equal distribution of wealth,
abolition of caste barriers and social inequities and destruction of
communalism and religious intolerance".

–Netaji Subhas Chandra Bose

Nation Pays Homage to the Great Patriot On His Birth Centenary

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D. P. BAROOAH

Role of Teachers' Organizations in Higher Education

J. N. KAPUR

Professionalisation of Educational Management

MUKUT CHANDRA BARUAH

The Problems of Teaching Computer Applications

— A Case Study

DALJIT SINGH BEDI & SATYANARAYANA PATTNAIK

S&T Education and Research in India

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Pursuit of Excellence

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(ii)	PLANNING (4 Years)	20 Seats

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SELECTION: Candidates are selected through Entrance Tests held in Delhi Test-1 will be held on 13th July, 1997 Candidates selected on the basis of *merit in Test-I,* will be required to appear at the *Test-II* on 15th July, 1997 Admission list based on Test I & Test II will be announced on 19.7 97 afternoon

RESERVATION OF SEATS : SC-15%, ST-7-1/2% Children/Widows of Personnel of military/Para-military forces killed/disabled in action - 5%, Physically Handicapped-5%, and candidates belonging to the following States/UTs* where there are no facilities for architectural education (Andaman & Nicobar Arunachal Pradesh, Assam, Dadra & Nagar Haveli, Daman, & Diu, H.P J & K, Lakshadweep Manipur, Meghalaya, Mizoram, Nagaland, Pondicherry, Sikkim, Tripura) 10% (*applicable to B Arch Course only)

MASTER'S PROGRAMMES .

(i) Architecture (35 Seats) with Specialisations in - (a) Architectural Conservation (b) Industrial Design (c) Urban Design, (ii) Building Engineering and Management (15 seats), (iii) Landscape Architecture (15 Seats), and (iv) Planning (70 Seats) with specialisations in (a) Environmental Planning (b) Housing (c) Regional Planning (d) Transport Planning (e) Urban Planning

ELIGIBILITY : (i) M.Arch - Open to B.Arch./B Planning or equivalent Degree holders For M.Arch (Industrial Design) candidates holding B.Arch or equivalent Degree are only eligible *(ii)* B E M - Open to B.Arch/B E (Civil)/B.Arch Engg. or equivalent Degree holders (iii) M L A - Open to B.Arch/B.Planning or equivalent Degree holders (iv) M Planning - Open to B Arch/B Planning/B E (Civil)/B.Arch Engg or equivalent Degree holders. Candidates possessing Master's Degree in Geography/Sociology/Economics are also eligible for the specialisations in Environmental Planning, Housing (Geographers are not eligible for Housing), Regional Planning, Urban Planning Candidates possessing Master's Degree in Economics/Statistics/Operations Research are eligible for specialisation in Transport Planning (v) 55% or more marks in aggregate at the qualifying examination (50% marks in respect of SC/ST candidates) Sponsored candidates must have a minimum two years' full time work experience

SELECTION: Selection will be made out of restricted number of candidates called for interview and test on 2nd, 3rd & 4th July 1997 at 9 00 am GATE/UGC (NET) qualified candidates will be preferred for admission to the seats for non-sponsored category of students (i e General & SCs/STs) Candidates without GATE/UGC(NET) may also be considered on merit

RESERVATION OF SEATS: SCs 15% and STs 7 1/2% Candidates sponsored by Central/State Government Departments Statutory Organisations as well as Public Institutions are admitted under Sponsored Category

PG. SCHOLARSHIPS : The distribution of the limited number of scholarships @ Rs 2500/ p m to GATE/UGC(NET) qualified candidates shall be made on merit in respective category (i e General and SCs/STs) as per the prescribed guidelines

DOCTORAL PROGRAMMES in the field of

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ELIGIBILITY: Master's Degree in any of the above courses conducted by the school or its equivalent from any other recognised University/Institution with a minimum of 55% aggregate marks or Bachelor's Degree in Architecture/Planning of the School or its equivalent from any other recognised University/Institution with a minimum of 55% aggregate marks and five years experience in teaching/research/Professional Practice Relaxation in aggregate marks as specified above may be made in the case of exceptionally qualified applicants

RESERVATION OF SEATS: As per Government's directive for SC/ST candidates

FELLOWSHIP: *All Scholars with a Master's degree in the respective* disciplines are eligible for fellowship of Rs 2400 per month Scholars with Bachelor's Degree in Architecture/Planning of the School or its equivalent with a valid Gate Score/UGC (NET) are eligible for the fellowship of Rs 1800 per month In addition contingent grant is given to the recipients of fellowship

Inservice candidates are not eligible for fellowship and contingent grant

TRAVEL ALLOWANCE. Outstation PG & Ph D candidates called for interview will be paid travelling allowance (oneway for PG candidates & bothways for Ph D candidates) for journey from the Railway Station nearest to their residence/place of work by 2nd Class Railway Fare along the shortest route (Within India). NRIs may apply directly with Bio Data on plain paper Foreign Nationals are required to apply through the diplomatic channels of the Government of India

IMPORTANT DATES

	BACHELOR'S PROGRAMMES	MASTER'S PROGRAMMES	DOCTORAL PROGRAMMES
1. (i) Issue of Application forms Commences on	1/5/97	1/5/97	
(a) Available from UCO Bank Branches at Delhi IIPA (I P Estate, Ring Road), Defence Colony (Near Mool Chand Flyover), Connaught Place (Near Marina Hotel), Karol Bagh (Arya Samaj Road), Som Vihar (R.K. Puram), Punjabi Bagh (Ring Road) against payment of the Application Fee of Rs 400/- in cash (during working hours only)			
(b) By Post from the School against payment of the Application Fee of Rs. 400/- by Demand Draft on SBI/UCO Bank in favour of "School of Planning & Architecture" payable at New Delhi.	1/5/97	1/5/97	1/5/97
(ii) Last date of issue of Application Forms:			
(a) By post from the School	23/5/97	23/5/97	13/6/97
(b) From UCO Bank Branches	2/6/97	2/6/97	
2. Last Date of receipt of completed Application forms at the School and by Registered post	2/6/97	2/6/97	25/6/97

D.R. Bains
REGISTRAR

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Editor :
SUTINDER SINGH

Role of Teachers' Organizations in Higher Education

D. P. Barooah*

The distinctive contribution made by the teaching community to the development of standards in higher education has long been recognized the world over. The teaching profession is regarded as the most important profession in that its social value lies in its significant contribution to improvement in the quality of life and betterment of the society at large. A lot depends on how efficiently the teaching community performs its functions befitting its role and status and it is in this context that organised associations of teachers are expected to play their role in the service of not only their membership but also the society. Teachers' organizations are naturally engaged in securing better conditions of work and service and better salaries. They are also engaged in programmes of academic work as organisations. But there is no denying the fact that the present state of affairs from the point of accountability is highly unsatisfactory. It is generally agreed that urgent necessary remedial action is called for by way of enhancing the credibility of the teaching profession.

While there has been no dearth of guidelines since the last pay revision designed to enhance performance befitting the role and the status of teachers, absence of a proper mechanism to monitor progress in a prescribed manner with the cooperation of all concerned appears to have made accountability the casualty. It is now necessary to have a fresh look at the problem guided both by the present experience and the patterns laid down by earlier commissions, policy documents and relevant recommendations.

In the early sixties, the UNESCO, through the recommendations of the Inter-Governmental Conference, emphasised the correlation between the role and the status of teachers asunder :

> *'The expression of status as used in relation to teachers means both the standing or regard accorded to them as evidenced by the level of appreciation of the importance of their function and of their competence in performing it, and the working conditions, remunerations and other material benefits accorded them relative to other professional groups'* (Quoted in ***Report of the National Commission on Teachers in Higher Education,*** March 1985, p. 36)

Adverting to the broadening of the role and functions of teachers organizations in different parts of the world including that of India, the Kothari Commission (1964-66), even while acknowledging the rightful role of teachers' organizations in India in securing better salaries and conditions of work for teachers, drew attention to the professionalisation of teaching and called upon teachers' organizations, *inter alia,* to work for the improvement of education in response to the challenge of the ever-changing socio-economic situation and, 'to establish a professional code of conduct for teachers and *to ensure that it is followed by members*', Pp. 64-5, emphasis added herein). It goes

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**Ex-Vice Chancellor, Gauhati University, Kharghuli, Guwahati-- 781 004, Assam* without saying that of the many factors influencing the quality of education and its contribution to national development, the quality, competence and conduct of teachers are supremely important.

The policy perspective document, *Challenge of Education* of the Government of India, Ministry of Education, highlighted the crucial importance of teacher performance: 'Teacher performance is the most crucial input in the field of education. Whatever policies may be laid down, in the ultimate analysis, these have to be interpreted and implemented by teachers, as much through their personal example as through teaching-learning processes. We are on the threshold of the development of new technologies likely to revolutionise teaching in classrooms' (August 1985, p. 55).

The National Policy on Education-1986 (with modifications undertaken in 1992) acknowledged that the status of the teacher reflects the socio-cultural ethos of a society; 'it is said that no people can rise above the level of its teachers'. It recognized that 'teachers should have the freedom to innovate, to devise appropriate methods of communication and activities relevant to the needs and capabilities of and the concerns of the community'. It said that efforts would be made 'to reach the desirable objective of uniform emoluments, service conditions and grievance-removal mechanisms for teachers throughout the country'. At the same time it underlined : 'Norms of accountability will be laid down with incentives for good performance and disincentives for non-performance. Teachers will continue to play a crucial role in the formulation and implementation of educational programmes'. Due stress was laid on the role of teachers' associations: 'Teachers' associations must play a significant role in upholding professional integrity, enhancing the dignity of the teacher and curbing professional misconduct. National level associations could prepare a Code of Professional Ethics for Teachers and see to its observance'. In this connection it is pertinent to observe that even though the Report on *Performance Appraisal of Teachers* (adopted by UGC on 4 November 1988) and the Report on *Code of Professional Ethics for University & College Teachers* (adopted by UGC on 27 December 1988) were prepared with the active participation of a national level association of teachers (i.e. five representatives from AIFUCTO), implementation thereof leaves much to be desired, as is clearly evident from the facts of the situation. This is all the more reason why teachers' associations need to be actively associated with securing the professional growth of teachers with all its implications. The acceptance of the guidelines should be judged not simply by their formal enunciation but by the praxis they generate principally in academic interest.

The teacher has a special position because of his/her duty or mission or professional responsibility. The *National Policy on Education* (NPE) 1986 *Programme of Action* reiterated the role of teachers' organisations in the following words: 'Strong, unified and responsible teachers' associations are necessary for the protection of the dignity and rights of teachers as also ensuring proper professional conduct of teachers. It would be advisable to encourage development of such associations. Professional associations of teachers will be encouraged to develop awareness of teachers towards their professional growth and development' (p. 185).

Having explained how it viewed the role of teachers' associations and the necessity of their taking serious interest in the professional performance of their members, the NCT Report on Teachers in Higher Education observed: 'The question of code of conduct or norms of behaviour, or what have been called unacceptable conduct has been discussed and we believe that teachers and their associations should readily agree to a clear definition of the role and responsibility of teachers. A mechanism for prompt redressal of grievances has also been suggested. We firmly believe that all these steps will greatly contribute to improvement in the atmosphere of work in our institutions' (p. 138).

The Ramamurti Committee to Review the NPE 1986, having recognized that teachers have to play a crucial role in the process of social transformation and that they have to shoulder complex tasks as active participants in national development, had occasion to observe as follows:

> 'Economic benefits, job security and freedom of work are generally perceived as necessary conditions for improvement in the social status of teachers. However, increase in material benefits is not sufficient. Cultivation of professional competence, capacity to inspire and motivate students, devotion to duty, good scholarship and academic record, and quest for knowledge and excellence are all equally significant. Unless the level of professional competence does not rise alongwith betterment of material

conditions, the status of teachers will not improve. Pursuit of excellence and establishment of reputation as a teacher go a long way in giving high status to teachers even if material benefits are not at par with other professions' (Towards an Enlightened and Human Society, *NPE, 1986 - A Review*, Final Reports, 26 December 1990, Pp. 315-6).

It is for teachers' associations to do their duty by their membership to extend accountability and enhance performance in the interest of the system of higher education itself.

After an agreement was reached with AIFUCTO at the level of the UGC the government in 1987 regarding the removal of certain anomalies, Prof. Yash Pal, the then UGC chairman, had occasion to say that 'one of the important parts of the agreement was that there would be continuing consultation with the all India teachers' organisation while we address anomalies, if any'. This is as it ought to be. In his open letter to fellow academics and friends of academia, Prof. Yash Pal said: 'But why, in heaven's *name, should our protest take a form of not teaching. As it is we teach far less than any major* university in the world, what with holidays, anniversaries and various other forms of disturbances on the campus. If higher education has an impact on our relative balance with respect to the rest of the world, we ought to be working harder than anyone else. I get very upset when I hear sometimes that in many subjects, teaching is really not much, students can read themselves. Sometimes it appears that some teachers also hold the same view' (*An Open Letter by UGC Chairman*, 29.9.1987. Teachers' Association should see how the guidelines on teaching days and workload could be implemented in letter and spirit.

Anyone could feel constrained to take notice of a certain trend among a section of teachers which amounts to doing away with everything connected with the time tested concept of accountability. This trend was visible even at the time of the NCT Report. Adverting to this negative trend, the National Commission on Teachers stated more than two decades back : 'We should like to say unambiguously that no profession and no service can survive without its do's and dont's. Whereas the privileges of teachers ought to be protected, and we are in this report making recommendations to ensure proper status and material benefits to teachers, the responsibilities must also be accepted. It would not do to point to politicians, or various authorities, saying that their dont's are not defined or to give an example of other countries where teachers' responsibilities are alleged not to be defined' (*Report of NCT* Pp. 121, 124,). The Commission expressed itself in favour of the Central Universities Review Committee of the UGC in respect of code conduct. Much the same elements are to be found in the Report of the Task Force on Code of Professional Ethics for College and University Teachers as drawn up with the active association of teachers' representatives. As for foreign universities, the Academic Rights and Responsibilities of the University of California have stated them in clear terms. It is an accepted scheme of things everywhere, further, that all assessment should be data based, open and participatory and hence, insistence on data based performance regarding access to promotional avenues can hardly be regarded as either 'punitive approach' or 'bureaucratisation'. The National Commission on Teachers rightly pointed out that 'when in recruitment or promotion organized demands are weighted in favour of mediocrity or even non performance, *the teaching profession, with pursuit of excellence* as one of its cherished values, abdicates responsibility'. There could certainly be modifications or amendments to existing norms and standards regarding performance appraisal and code of conduct, etc, but, to ignore accepted norms and standards in career advancement and professional conduct will be a counsel of despair.

The American Commission on Teacher Education expressed itself on the quality and importance of teachers in the following words: 'The quality of a nation depends upon the quality of its citizens. The quality of its citizens depends—not exclusively but in critical measure—upon the quality of their education. The quality of their education depends, more than upon any single factor, upon the quality of their teachers'. Well might India's National Policy on Education say that 'no people can rise above the level of teachers'. Considered in this light, everybody could wish to endorse the urge of the National Commission on Teachers that the teaching community apply 'worthy criteria of performance to itself so that it earns the most honourable place in our society'. As I view it, it is a duty incumbent on teachers' associations to enable the teaching community to play its role meaningfully in the new situation of changing times.

Professionalisation of Educational Management

J. N. Kapur*

ASCE Seminar

At a recent seminar organized by the Association of Senior Citizens in Education, it was proposed that all directors of education, all officers of state and central education ministries and all senior officers like heads of Kendriya Vidyalaya Sangthan and Navodya Vidayalaya Samiti should come from the ranks of eminent educationists rather than from the IAS cadre. It was felt that such a decision on the part of central and state governments will enable the system to derive benefit from the experience and deep involvement of the educationists and it will be a morale booster to the academic community which has become alienated from the system, of which it is the most important part. This will help in professionalization of educational management. Because it is a completely human system, it cannot be led by outsiders who come to it for short periods on deputation from other systems.

It was also felt that in order to find suitable educationists for this purpose, the Indian Educational Service should be revived. This revival was recommended by the Kothari Commission as well as by the *National Educational Policy Document* of 1986, though it was not accepted by the Ramamurthy Committee. It is a fact that it was accepted in principle from 1966 to 1991 and its non-implementation was due to the opposition by vested interests including those of IAS. It was also felt that its revival would have a healthy influence on the educational system.

Since education is in general a state subject, it was also felt that each state should have its own state educational service and its members should not stop at the level of additional directors of education, but should be able to go on to become directors of education and secretaries of education. The admission to these services should be by competition tests as well as by direct recruitment.

Inservice Training of Educational Managers

The problem of inservice training of tens of thousands of educational administrators at all levels was considered to be too big to be undertaken by National Institute for Educational Planning & Administration (NIEPA) and a few more similar organizations. This is similar to the problem of inservice training of millions of teachers in the country. There is a real dilemma here. If we do not retrain teachers and educational administrators, we continue to follow out-of-date courses and out-of-date management policies. If we train them on a large scale, this will take away a significant part of the educational budget. If we emphasize quantity in education, the decision will be against retraining, but if we emphasize quality in education, the decision will be in favour of massive inservice training.

In any case we have to think of cost effective methods of inservice training through open universities, correspondence courses and other similar means. These will be effective if there is a motivation for educational administrators and teachers to take an advantage of these courses. For crossing every efficiency bar, it should be compulsory to pass a certain number of such tests.

The present inservice courses where only teacher's presence is required and no tests are given are not quite effective. The directorates of education and the University Grants Commission (UGC) conduct many such courses at substantial costs to these agencies, but the residual effect left with the teachers is nominal. Even the curricula for these courses are not carefully planned.

An Alternative Method

Educational administrators and teachers are mature persons and can learn a great deal on their own, provided there is a motivation for such learning. In most countries of the world, this retraining is done through professional organizations. As an illustration, we consider the work of National Council of Teachers of Mathematics of USA. It has 80,000 members and holds 10 to 12 conferences in different parts of USA every year. Each conference is attended by 5 to 10 thousand teachers at their own expenses and in each conference at least 50% of teachers present papers or participate in the discussions. Each conference is held in 15 to 30 parallel sessions through which teachers share their own

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*C.V. *Kapur Education Foundation, C-766 New Friends Colony, New Delhi-110 065.*

experiences and new knowledge. Teachers are constantly reading, thinking and trying innovative ideas in order to present some useful results at these conferences. They are prepared to spend their own money because they have to speak and not just to listen to senior university professors or ministers. Part of the expenses of these conferences are also met by book sellers and publishers who hold exhibitions at these conferences. Teachers help the growth of these organizations and in their turn, the organizations help in the professional growth of teachers.

In our country some states had started the practice of allowing teachers to attend one conference once in 3 years and this created a lot of enthusiasm among the teachers. But even these states stopped this programme for reasons of economy.

Professionalization. What? For Whom? By Whom?

Professionalization is collective growth of individuals in a profession. It is the sum total of those activities which help every individual to grow professionally.

Do we have professionalism among teachers or educational administrators in our country. Do they have some mechanism to help one another's growth professionally?

We have a large number of teacher's associations, but these are more or less trade unions of teachers to fight for better service conditions. There is nothing wrong with having these, but we have also to have professional organizations to help teachers and educational administrators to grow professionally, where the emphasis is to help one another to give better teaching to students and better educational administrators to institutions.

We have some good organizations, but their membership is small. They cover a very small percentage of teachers and educational administrators. If this type of professional organizations have to grow in the country, then this can be done only by teachers and educational administrators themselves. Professionalism is for teachers and educational administrators and it has to be developed by them and by them alone. The government can help by providing incentives for professional growth, but it can help only if the teachers and educational administrators are prepared to help themselves.

No government can pass an act for professionalising educational administrators or sanction 100 crores of rupees for this purpose. For it is not money so much that is needed for professionalisation, as it is dedication and commitment on the part of those concerned that is needed for this purpose.

Once a group has become truly professional, it will command respect, its recommendations will be treated with great attention and it will have an important role in the growth of its own discipline.

Concluding Remarks

The academic community in India is weak, not because the government does not respect it, but because it does not respect itself.

In fact though we have academic individuals, we do not have an academic community committed to academic ideals. What we need are massive organizations of school and college teachers in individual disciplines and massive organizations of educational administrators at all levels. We have at present a large number of small organizations each led by a small group of enthusiasts, but we do not have a large organization run in a democratic manner by all members of the group concerned. In some cases we have such organizations and these have had an impact.

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The Problems of Teaching Computer Applications

A Case Study

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The University Grants Commission has drawn a very pragmatic proposal to introduce vocational subjects as a part of the existing first degree courses viz, B.A./B.Com./B.Sc.. The growing unemployment problem is the most challenging problem for the government and society now a days. The main objective of various vocational subjects introduced is to prepare students for self employment or for getting employment.

Computer Applications — this subject is related to the most swiftly changing technology in the world now a days. The aim of this paper is to make an analysis of teaching the highly standard syllabus of Computer Applications.

According to the syllabus of T.D.C. Part-I Examination Paper I is divided into two parts as (a) & (b). In this paper (a) covers computer fundamentals and introductions to IBM PC and (b) covers the operating system and business data processing. Similarly paper II is also divided into two parts where (a) covers the data base management system-I and computer graphics. Paper III entirely depends upon on the job trainings of the papers I & II with practical and comprehensive viva-voce test. It may also be mentioned here that the first two papers carry seventy marks each, and the third one carries sixty marks.

Similarly for the T.D.C. Part II Examination there are three papers viz,

Paper - IV. Computer aided drafting and advanced topics in computers, carrying seventy marks

Paper - V. Entrepreneurship development, carrying seventy marks.

Paper - VI. Project report + Practical, carrying sixty marks.

In the bird's eye view, of course it is a very good syllabus for the development of entrepreneurship. But as we are in the North East region of the country we are facing lots of troubles in the preparation of topics for the students.

Reading Materials

Computer Applications cannot live only in the minds of teachers or students. Due to lack of adequate reading material we are facing some hurdles in this regard. Properly related books and journals are limited in this particular region. The availability of different topics bound us to search for the various reading materials. For example, in the first paper there is a topic — *use of computers in the modern society*. Here we have to discuss about the applications of computer in the weather forecasting, census, oil exploration, etc. We discuss these topics as some essays But naturally some of our curious students ask about the underlying technologies behind them Then we have to keep quite due to our limited knowledge. Certainly at that moment question of trustworthiness or credibility stands before us. This is only a simple example.

Practical Facilities

Lack of practical knowledge of this subject creates boredom in students minds If the definition of the Computer Applications had been limited to the word processing, databases, lotus and games, we have nothing to say about it But it covers a large syllabus for which we need different softwares in our laboratories We cannot overlook the increasing demands of the society or nation as a whole For the different facilities we have to request college authorities. But still we have to wait.

On the Job Training

According to the Annexure II of University Grants Commission (UGC) practical training for the students should be attached with the local institutions and employing establishments which have laboratory/workshop facilities related to the new course and where adequate supervision by qualified personnel should be available. In the case of Lakhimpur Commerce College though a Memorandum of Understanding (MoU) with an establishment of Guwahati was signed, now they are silent about their pledge despite several requests.

A student of vocational course of Computer Applications should prepare report of on the job training which carries sixty marks along with practical and comprehensive viva-voce test To speak the truth we have not sent any student for the on the

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job training till now. Keeping the aim of the training in mind we communicated with the Chief Public Relations Officer of North East Frontier Railways, Maligaon, Guwahati and the Public Relations Officer of Guwahati Oil Refinery. The Chief Public Relations Officer of North East Frontier Railways agreed to accept 2/3 trainees at a time, while we have not got any reply from the Guwahati Oil Refinery. Now the problem is we have 16(sixteen) students in our first batch, we cannot discriminate with the others by selecting two or three students only.

Evaluation

According to the UGC Guidelines evaluation of students', performance in the practical work and on the job training will be carried out with the assistance of personnel of training institutions/employing establishments where this training is undertaken. Now what can we do in the above mentioned circumstances of on the job training?

Learners

Prof. P. Subba Reddy, Director of Computer Centre of Osmania University, inaugurating the UGC sponsored programme 'Computer Applications in University Budgeting' in Kakatia University suggested that a person handling the computer need not be an expert of Electronics or Mathematics. But in the classroom when we talk about Computer Arithmetic or about some programmes of BASIC (related to matrix) we find some difficulties for the students of Humanities group who have no background of advance Mathematics. It will be pertinent to mention here that in the Dibrugarh University a student of Arts can take Computer Applications if he takes Mathematics or Economics as one of the core subjects. A computer forces students to deal with the consequences of their own actions. They learn that a computer follows syntax and logic given to it by the programmer. When the results of computer works are unsatisfactory they eventually feel bore.

Teachers' Training

We, the teachers of Computer Applications discharge our services in spite of our regular classes of the original subjects. It is seen that dearth of suitable instructors and regular teachers (in some topics) can also keep this subject unpopular. University Grants Commission is reported to have made arrangements for the training of college teachers which has provided computer facilities. We welcome this. I had the opportunity to avail the training given by Sardar Patel University, Gujarat and the workshop in the Allahabad University, Uttar Pradesh. From my little experience I feel that instead of aiming to cover all the course content within a short period of time if the training centers can cover some limited courses of the syllabus within a specific period of time to specialize the teachers in both practical as well as theories then it will be more fruitful. Because we need various specialized persons in the areas like DOS, UNIX, C, C++, ORACLE, etc. It may be mentioned here that UGC can also provide the Networking facility like INFLIBNET to the libraries of universities and colleges which may help to share the expertise among universities and colleges.

Maintenance of Computer Centre

There arises the problem of maintaining computer systems. Most of the maintenance agencies refuse to take annual contract for the older systems. Alternatively, it needs consultancy of higher professionals to run the system which is almost out of reach for the colleges. In the past, computerization meant involvement of professors, scientists, engineers, etc. This tendency still prevails. As a result many persons are required to maintain the system which naturally delay the process of learning.

Introducing vocational course in Computer Applications UGC has done right in the direction of developing entrepreneurship among the youth which can be definitely a helpful step to minimize the unemployment problem. In 1980-81 in Assam there were in all 73,053 students in the Arts section of the college and 23,408 students in the science section of the college. Definitely a major part of the unemployed are from Arts stream. In spite of various problems there is good prospect for the computer entrepreneurs even though there may be some problems related to infrastructure facilities, finance, marketing, etc in this region.

References

1. Rao P.H. Sethumadhava., Vocationalisation of First Degree Education. *University News*, September, 12, 1994. P6.
2. Syllabus for TDC Part-I and Part-II Examinations of Dibrugarh University
3. Mali D.D. Entrepreneurship Development in the North Eastern Region : Problems and Prospects, *ACTA Journal* Vol.XX, 1995-96, Pp6-13.
4. The UGC letter (F. 3-22/94(VE/C), dated 7th June, 1994, 11th June, 1994.
5. Computer in University Budgeting. *University News*, December 6, 1993, P 25.
6. Permission to offer Computer Applications as a vocational subject. Dated 28/8/95. D.U./SWS/AO/VOC/1313.
7. Computer Training Programmes. *University News*, December 21, 1992, P 27.
8. "INFLIBNET — Information and Library Network" inter agency working group report." *University News*, June 16, 1989.
9. Sarmah T.C. *Adhunik Bharatar Sikshar Itihash Aru Samasyawali* (Dibrugarh : Banalata, 1992) P 427.

S&T Education and Research in India

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The existing international system has seen western domination worldover, mainly due to the sound economic and technological advancement of western countries in every sphere ranging from education to their international relations with both developing and underdeveloped world. Phenomenal progress in economic sector accelerated the development of education, particularly scientific and technical education, which ultimately paved way for the advancement of research in these countries. This system was later inherited by the third world. India, after its independence in 1947, realised the value of independence by way of independence not merely from physical factors, but also from socio-economic factors, polito-diplomatic interference and dominance and interests of western powers.

The first Indian Prime Minister Pandit Jawaharlal Nehru, a patron of science pointed out that 'temper of science', the human condition that fosters and rejoices in the pursuit of science, is ultimately responsible for making science possible. It is science alone that can solve the problem of hunger and poverty. The future belongs to science and to those who make friends with science, he emphasised.

This year when India is celebrating 50th year of its Independence, it is time to assess what progress India has achieved in science and technology (S&T) and how far our education system has supported science, technology and research and development programmes of the country.

S&T Education in Pre-Independence Era

Contemporary science and technology in India was introduced by British rulers mainly to meet the needs and requirements of the imperial power to ensure military, administrative and economic control over the country. This, however, led to the development of some viable S&T infrastructure in India. During 1850s, the engineering education took birth in some big cities of India and later spread to different parts of the country in various dimensions of science and technology. University education system laid emphasis on the development of science education, its spread and utilisation. However, the spread and importance of science education was limited to the British rulers' planned agenda for India's progress in science and technology, as they conceived India's progress in S&T a threat to their order and interest in military and economic fields.

S&T Education in Post-Independence Era

During 1950-60s, India faced challenges with a high degree of sophistication and sagacity in the application of science and technology and related education to make up for the technology gap accrued as a result of the efforts of British imperialist rulers of eighteenth and nineteenth century. This allowed our country to participate in industrial revolution in world market. After Independence, the progress in science and technology field was not realised immediately due to major problems of poverty, illiteracy, limited facilities for education (particularly professional education) and training and research in science and technology. However, the scientific temper and spirit of the country was clearly outlined and placed in a special position in the planned agenda for national development.

Scientific Policy Resolution

Realising the importance of science in social transformation, Pandit Nehru laid emphasis on providing necessary facilities for studies in science and technical training. A Scientific Manpower Committee was appointed to assess the requirements of scientific and technical personnel and to frame a policy in this regard. A decision was also taken to establish a chain of national laboratories throughout the country to carry out scientific research in various disciplines. And, in March 1958, a scientific policy resolution was adopted by the Parliament — a remarkable policy document considered as the official guide to India's various approaches in promoting and fostering scientific activities in the country. It clearly defined that the scientific approach and the use of scientific knowledge are essential for providing reasonable material and cultural amenities and service for every member of the community and to secure for the people of the country all benefits that can accrue from the acquisition and application of scientific knowledge.

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Scientific Advisory Committees

The Government has constituted from time to time several science advisory committees, commissions and working groups to counsel the Government on policy matters, structural R&D developments, education, planning, etc. These include: Scientific Advisory Committee to the Cabinet (SACC 1956), Committee on Science and Technology (CST), National Committee on Science and Technology (NCST, 1971-79), Science Advisory Committee to the Cabinet (SACC, 1981-85) and Science Advisory Committee to the Prime Minister (SAC-PM, 1986-90). To improve the quality of science education and promote scientific temper as envisaged in National Policy on Education (NPE-1986), a centrally sponsored scheme 'Improvement of Science Education in Schools' was started in 1987-88. Similarly, centrally sponsored schemes in computer education were started in 1993-94.

Vocational & Technical Education Policy

Progress in technology needs availability of trained and highly skilled scientific manpower The Government has made consistent efforts to improve the quality of technical education A programme on the improvement of quality of engineering education was introduced in 1970 wherein some engineering colleges and technical institutions were identified for granting them special assistance for research and development and further improvement in the standard of technical education The National Policy on Education was reviewed under the Chairmanship of Acharya Ramamurthy in 1990. The Committee stressed the need for imparting vocational and technical education to achieve universalization of elementary education and to make education relevant to the needs of the community and also to meet new challenges of liberalisation and globalisation of the economy. Under the revised education policy, the role of All India Council for Technical Education (AICTE) in the development of technical education has gained importance. The Council's mandate included programmes on education, research and training in engineering and technology, planning, management and other allied subjects. AICTE also formed a National Board of Accreditation (NBA) in 1994 with the primary objective of ensuring quality control and assurance in engineering education. In 1993, the Government prepared a draft paper for advanced scientific policy on the development of science education and its relevance to society, environment, industry and indigenous technical skills.

Science Education & Planned Development

In the post-Independence era, the need of technical trained personnel and improvement in the standard and infrastructural facilities of education, particularly science education were recognised as the essential prerequisites of development in Socio-economic sector of the country. As a result, in the process of expansion of education system, a large number of schools, colleges and universities were established and science and technical education facilities were created at each level. At higher education level, science education was facilitated by providing huge financial resources and facilities in the form of well equipped laboratories. Eminent research persons and educationists were engaged in scientific field at a level commensurate with the development needs of the country with a view to create wider opportunities in the field of education and training of scientific personnel. This activity was ultimately aimed at meeting the demand and accelerating industrial growth. Scientific research gradually mobilized the skills of a wide range of professionals, research scholars, scientists, engineers and technical persons. At the university level even the enthusiasm of teachers in the field of research was seen as satisfactory. The teaching became more instructive for students, particularly for those doing postgraduate and research work. Besides the government, various industrial houses, educational societies and research and development (R&D) institutions took initiatives and large scale investments were made for the development of science education and adequate facilities for research. All this contributed to the development of infrastructure necessary for student enrolment in higher education level of science in the country.

Similarly, the scope of science and technical education at lower middle levels of education was expanded to meet the deficiencies in technical manpower and to create self employment opportunities for rural youth to widen the field of small scale industries in the country. In the field of technical education, particularly at the middle level, polytechnics and vocational and industrial training institutes (ITIs) were prominent in providing scientific and technical training to the students at higher secondary schoolage. The middle level science education was given more importance because a large proportion of economic and industrial development depended on this level of education in our country. In 1990, there were about 900 polytechnic institutes functioning in the country, with student enrolment reaching more than 2.5 lakhs. The present estimated figure is around 1200. Similarly, there has been an upsurge in IITs making considerable contribution to the national development process. Besides, at middle level, there is rise of certain professional educational institutions providing nursing, family planning and other non-formal education and training programmes and turning out middle level skilled technical personnel.

Higher education in science and technology and researches are mainly confined to the university, professional colleges and research and development institutions in India. In the recent past, new economic and industrial liberalisation policies of the government enabled some foreign universities, institutes and educational trusts to open their branches for imparting science and management education in the country. At present, about 90 per cent of the total 229 universities and above 75 per cent of 8200 colleges are providing science education. According to AICTE calculation, the student enrolment in higher science and technology studies could be about 5 per cent of the total 60 lakh students (including 55 lakh undergraduate and postgraduate level students in general stream) in our country.

Recognising the importance of professional scientific and technical institutions in specific fields like engineering, medicine, computer, agriculture, etc, the Government established such institutions in different regions so as to create efficient technical manpower to meet the requirements projected by different states. At present, in higher level education leading to Bachelor's degree in engineering, technology and computer sciences, over 450 colleges are functioning with the enrolment capacity between 2.5 to 3 lakh students. Some of these institutions offer postgraduate degrees; the enrolment capacity for postgraduate degrees is about 45,400. In addition, certain premier institutions like Indian Institute of Science (IISc), Indian Institute of Technology (IITs), Indian Statistical Institute (ISI), some institutions deemed to be universities, such as Birla Institute of Technology (BIT), Tata Institute of Fundamental Research (TIFR) and some regional autonomous colleges, technical institutes and advanced centres are centres of excellence on science and technology. The financial expenditure on technical education since the inception of first Five Year Plan stands at 5453 crores, as compared to 4490 crores spent for general education in the same period. According to an estimation, the per capita expenditure for a technical student at the university level is Rs. 16,210 as compared to Rs. 1,269 for a general category student. Table 1 shows the growth profile of educational infrastructure and human resources in science and technology in the country.

S&T Education/Research & Development

Research and development has been given considerable attention and some efforts have been made to integrate it with higher education in science and technology. As a result, a good number of well equipped science laboratories have been established at colleges and universities under the supervision of University Grants Commission (UGC), professional autonomous bodies like Council of Scientific and Industrial Research (CSIR), Indian Council of Medical Research (ICMR), Indian Council of Agricultural Research (ICAR), Central Council of Research in Ayurveda and Siddha, Unani Medicine, Homoeopathy and Yoga and Naturopathy and many others at the central and state levels. Public and private sectors and industrial research and development units at various levels facilitated science developments by importing sophisticated technologies, recruiting efficient science personnel, training the personnel in their own establishments, and deputing them abroad. All this has resulted in rapid progress in S&T education and development of infrastructural facilities in scientific research.

The government at the central level constituted special commissions in different sectors like atomic energy, oil and natural gas, electronics and space, headed by panel of scientists having reputation in their fields. This was an important factor that yielded speedier progress in research and development sector and created opportunity for higher education in science. Similarly, certain other fields like defence, railways, etc in direct control of the government and ministries, also have a good number of research laboratories, providing research opportunity in science and technology. Besides, the government provides financial assistance in the field of scientific research development to the industry under its scheme of Cooperative Research Associations.

The higher education in India is mainly concentrated in universities and a limited number of institutes. At the university level, though there is wider facility for learning, there is inadequate scope for research. To meet this deficiency, the government established certain advanced and competitive centres of excellence to facilitate higher education and research in science and technology. Besides, some information and documentation centres like INSDOC, Defence Scientific Information & Documentation Centre (DESIDOC), Technology Information Forecasting & Assessment Council (TIFAC), National Informatics Centres (NIC) and National Information System for Science & Technology (NISSAT) have been established to facilitate the development of technology by identifying S&T gaps in the country as a part of global process and filling up these gaps by providing S&T information and a variety of other allied services.

Resources in S&T Sector

The research and development in India in all sectors during post-independence period has continued to march ahead, pursuing programmes and using modern science and technologies for national development. Recognising the role of science and technology in the development of the society, the government formulated a technology policy statement in 1983 with the basic objective of developing indigenous technology ensuring efficient absorption and adaptation of imported technology appropriate to national priorities and availability of resources. It aimed at attaining technical competence and self-reliance and reducing vulnerability particularly in strategic and critical areas by making maximum use of indigenous resources. Various governments have made conscious efforts towards planning and allocating appropriate resources for scientific research and development.

The major source of research for nation's scientific research is the government, departments of government funded institutions followed by private sector industries. The research scope at university level is very poor and unplanned, except in a few cases. In public sector, though the number of research institutions is less as compared to that in universities, the research output in public sector is satisfactory. In 1992-93, there were some 2750 institutes doing research in different sectors: 817 in state, 412 in central, 210 in universities, 119 in public sector and 1197 in private sector. In private sector, the R&D activities are either financed by their own industry or are sponsored by the government and scientific research organisations. The higher scientific education and research are funded by extramural agencies such as, the government at the centre, while the intramural funding for scientific research to the universities comes directly from the University Grants Commission. Extramural funding goes largely to the higher education sector, and to a small extent, to national laboratories and is provided in the form of sponsored research projects approved by high level committees.

It is obvious that a country's research and development in scientific field is directly related with socio-economic parameters, gross national product (GNP), and per capita income of the people. The status in human resource is good which enhance and help the research in science and technology, as compared to other developing countries in South Asian region. Over the years, the R&D expenditure as a percentage of GNP has been continuously increasing. Today, India spends about 0.83 per cent of GNP on scientific and technological development. The expenditure on R&D in science increased from 1.10 million rupees during 1948-49 to 51.4 billion rupees during 1992-93. The total R&D personnel in S&T sector in India in 1950 was estimated about 0.188 million. By the year 1993-94, the number had increased approximately to 60.388 million, i.e. the annual enrolment in S&T discipline has been of the order of 1.4 million. Likewise, the average yearly passout of S&T graduates is of the order of 0.2 million. Till 1 April 1992, the total number of personnel engaged in R&D industry was 2,93,348, out of which the percentage of female personnel was only 10. The highest percentage of female personnel in R&D sector of our country served in private sector industries i.e. about 11 per cent of the total employment of 42,442. Whereas, the per cent of female employment in research institutions in private sector was about 29 per cent of the total employment of 9181. However, among the women employment in R&D sector the private sector accounts the highest, i.e. 40 per cent of the total employment.

Science Education at University Level

Rapid transformation in social, political and other sectors influenced proliferation of universities during post Independence period. There are now 231 (including 34 institutions deemed to be university and 12 central universities) universities in the country providing higher education. Almost all universities having the facility of science education at undergraduate, postgraduate and doctorate levels, and this is the positive side of development of science education infrastructure at higher level. The negative side of the development is the extent of relevance of higher education and scientific research at university level in the fast growing technological research and development in the country. Some important aspects of the higher science education that need consideration have been identified as :

- The type, quality and standard of programmes of higher science education and research in the universities;
- The state of research and development at the universities and its relationship to the needs of the industry and planned process of development;
- The role of the government in promoting and encouraging scientific research and education in the universities.

Other problems concerning the higher science education level include proper relationship between teaching and research, manpower facilities in the field of research, advanced training in science and tools required, administration of universities in the development of science education, the role and policy of universities in exploring scientific temper of the country in response to changes emerging from technological, development, and the anxiousness of various state governments to open new universities as the latter have become a state prestige symbol. However, the lack of continued support necessary for the development of science education has been responsible for its slow progress and degradation of standards. Another major drawback in the scientific research at the university level is the standard and quality of research. The research at the universities is tied up with doctoral research of the students. This tie-up is an unhealthy trend having serious repercussions on the scope and quality of research was pointed out by the Kothari Commission (1964-66). The Commission indicated that the productive research work at university level is quite low and that most of the PhD theses deal with topics which in formulation and scope could be considered behind by 10-20 years. It is also mentioned that the close tie-up of scientific research activity in universities with PhD theses imposes a constraint that just about eliminates the possibility of a rise in the level of work.

There is no doubt, however, that a few scholars and scientists have had substantial success in exploring the frontiers of S&T in their respective fields. The number of doctoral candidates in the field of science increased from 1,500 in 1975 to about 4,700 in 1990. The two apex autonomous bodies the University Grants Commission (UGC) and the Council of Scientific and Industrial Research (CSIR) have been coordinating in the transformation of educational system and research activities in the country. The UGC has initiated several schemes of recognising certain departments at the university level as advanced study centres. Each of these centres is depicted as a model of development of scientific spirit and temper with an aim of strengthening the scope of science education and research. These centres are funded with the required financial and other resources for this purpose. Similarly, the CSIR enhances the research scope at university level by granting fellowships and research grants for projects concerned with the development of scientific and industrial research. Besides, various other government departments and ministries are providing funds for scientific research to promote frontline research in the emerging fields of S&T. It is also planned to set up a separate university on electronics and communication system that may provide opportunities to establish a direct link between S&T institutions and R&D sectors in regional, national and international levels.

S&T Education Policy — Some Suggestions

For streamlining science for national development, there is a strong need for upgradation and change in present S&T education policy. Since independence, several steps have been taken for improving science education but inadequate planning in various fields resulted in rather weak performance of S&T education as an input to the national efforts and development strategy. The following areas require greater attention in the field of science education which would have considerable impact on the formulation of specific science education policy :

- **The present network of science and technology institutions — higher and secondary level scientific educational institutions, institutes for science and technology and other institutions engaged in testing standards and quality control should be reviewed and integrated with national scienctific policy;**

- To utilise full benefit of scientific research in achieving a technology-developed state, the government should set up a long-term science policy, emphasizing S&T education, planning, research and development and providing adequate financial resources with less bureaucratic *and administrative control* over the higher science educational bodies. The government should encourage and fully support higher science educational institutions engaged in research programmes by way of consultations and guidance in the execution of programmes;

- Special attention should be given by the government to the development of good infrastructure in both existing and new institutions engaged in providing S&T education and research, in terms of human resources, technical assistance and other necessary facilities like laboratory, library, equipment and workshops. The government also need to establish cooperation with different R&D sectors in the country as well as among international organisations and institutions in these aspects;

- There should be a planned coordination between R&D industries and scientific educational institutions. The government should initiate certain incentives such as tax relief, compensation and subsidies to the R&D industries offering facilities for training students in educational institutions,

- In the Indian context, the social dimension of education is always given importance which, however, excludes science education system. Though scientific and technological development is the basic objective of higher science education, there is need to use science as a social transformer in Indian society. The curriculum of science education should be patterned in tune with the social system, so that educationists, scientists and scientific personnel can play their role effectively;

- Low standard of education in many of the Indian universities in higher science education has resulted in falling standards and lack of compatibility of science personnel in our country. Similarly, the products from good science institutions having wide experience and knowledge think for their personal improvement rather than utilising their efforts in the national development process. The 'brain drain' has caused India a huge loss. To check these trends, the government, higher educational institutions and R&D industries together should frame a policy to provide suitable environment for the competent personnel. This will ultimately help in both establishment and advancement of science education and development of S&T infrastructure;

- Continuing assessment of science and technology education programme/curricula is vital to determine if the science education is supportive of the national development goals;

- Integration of S&T policy (with emphasis on education) with national development plans is necessary to achieve efficiency and effectiveness in the attainment of national goals;

- For poor quality of research work at universities, the universities alone cannot be blamed. The government while allocating financial and other resources to the universities always give low priority to the basic research institutions as compared with other scientific bodies engaged in applied research. The government should not encourage applied research at the cost of basic and fundamental research at universities. A policy should be framed that basic and applied research coexist, as both are equally essential for the development of science;

- Centre sponsored universities and state sponsored universities categorization is also a major drawback in the progress of science education Massive support from central government for central universities attracts good students and efficient teachers. At the same time, low priority given for structural development to state funded universities deprive both the teachers and students in these universities to be more active in their field This practice should be stopped immediately;

- A monitoring cell at central and state levels should be formed comprising educationists and scientists to guide and evaluate science education and research carried out at various levels. Such cell will help in the improvement of standard and will attract the best talent for science education and research, which may establish excellence in solving the basic problems from time to time;

- The policy of modern Indian education system should consider the teaching of science in primary and upper primary levels as an integral part of general education system in a form appropriate to the maturity of students. The education curricula relating to science at these levels should be centered on learning experience and practical model basis. For this, necessary requirements like easy books in various Indian languages and demonstrating science models be made readily available for the pupils;

- To impart effective science education, curriculum research and development, guidance; examination and evaluation procedures, the planning of science laboratory and workshops, the design of teaching aids, science programmes in mass media, instructional materials, training of teachers and students are necessary and these should be frameworked separately. Each programme should have direct relevance to scientific training, research and development aspects;
- To ensure the improvement of standard of science education at the universities, advanced study centres of excellence in specialized fields of science should be opened at each university that may encourage the exchange of ideas and joint studies among institutions and R&D industries.

Conclusion

The trend in scientific and technological research in India has changed the socio-economic and industrial sectors to a large extent. This in turn has enabled the country to participate in the world market. Liberalisation and globalisation policy of the government inviting multinationals and giant industrial sectors is another factor that has necessitated improvement in the quality of research and development in science, which ultimately may lead to the development of science education. The rapid growth of population and increasing demand for food, health and education are the major challenges for the quality of human development in our country. To meet these challenges, a national development strategy in science and technology is highly essential. The development strategy may need closer cooperation of science in discharging new ideas and knowledge in science and technology towards improvement in the quality of life of the people and evolving a comprehensive science education and research and development policy for overall development. Proposals are presently underway for revamping the Indian science and technical education system to meet the challenges facing the country.

Table 1 : Student Enrolment in Higher S&T Education in India

Discipline	*1950-51*	*1970-71*	*1980-81*	*1990-91*	*1992-93*
Science	36,194	4,43,013	11,14.417	-	11,67,600
Agriculture	3,131	31,860	39,231	46,908	61,500
Medicine	15,260	1,31,151	1,10,020	1,50,458	1,63,500
Technology	12,094	1,00,400	1,28,937	2,16,837	2,34.100*

*Includes engineering student enrolment.

Source : World Science Report 1996, University Development in India & UGC Annual Report 1980-81, 1992-93.

Table 2: Plan Expenditure on Higher and Technical Education

(Per cent/Million rupees)

	Ist Plan	*IIIrd Plan*	*Vth Plan*	*VIIth Plan*	*VIIIth Plan*
Higher education	9/140	15/870	22/2,050	16/12,010	8/15,160
Technical education	13/200	21/1,250	12/1,070	14/10,830	14/27,860

Table 3 : Enrolment in Science and Engineering Education, 1992-93

(Thousands)

Field	*Male*	*Female*	*Total*
Science			
Natural Science	624.0	318.6	942.6
Medical Science	109.7	53.8	163.5
Agricultural Science	56.7	4.8	61.5
Total	790.4	377.2	1167.6
Engineering and Technology	214.9	19.2	234.1
Total (Science & Engineering)	1,005.3	396.4	1,401.7

**Source: University Grants Commission record* and *World Science Report* 1996.

Table 4: Number of Doctorate Degrees

	1990-91	*1991-92*	*Growth Per cent*
Science	3002	2970	- 1.0%
Engineering and Technology	260	262	0.7
Medicine	101	115	14.8
Agriculture	690	695	0.7
Veternary Science	152	155	1.9

Table 5 : Science and Technology Personnel in India

Field	*Stock of S&T personnel (thousand)*		*Rate of growth (%)*
	1985	*1990*	
Engineering degree holders	372.6	454.4	4.0
Engineering diploma holders	564.2	734.8	5.5
Medical graduates	268.2	314.4	3.2
Agricultural graduates	133.3	162.8	4.1
Veternary graduates	28.3	33.4	3.4
Science graduates	1,419.0	1,684.2	3.5
Science postgraduate	350.3	419.7	3.7
Nursing graduates	3.7	5.5	8.3
Total	3,139.6	3,809.2	

* **Data includes (i) dental surgeons and BSc (BEd) degree holders**

* ***Source: World Science Report*** **1993**

Pursuit of Excellence

Dr. R. Chidambaram, Chairman, Atomic Energy Commission & Secretary to the Govt. of India, Department of Atomic Energy, delivered the Convocation Address at the Thirtythird Annual Convocation of Shivaji University, Kolhapur. He said, "For a nation to grow and advance rapidly, it has to strive for excellence in all its spheres of activity. Each individual in the society has to strive to fulfil to the maximum the promise of his or her talents and the society should provide the opportunity and the environment to make this possible. In this task, the role of educational institutions is crucial in motivating youth in its pursuit of excellence". Excerpts

What is Character ?

Einstein once said :

> *"Most people think that it is the intellect which makes a great scientist. They are wrong, it is the character".*

This does not mean that any one can do great science. High intellect is necessary but not sufficient; character is more important. The definition of *character* is, however, not easy. Character means integrity; it means pursuit of excellence within the individuals limitations, of course; it means perseverance in the face of adversity; it means commitment to national and social causes; and it means also a commitment to justice and societal equity.

Samuel Smiles says in *Self Help*:

> *"Character is the noblest possession of an individual. It exercises a greater power than wealth and secure all the honour without the jealousies of fame... Men of character are not only the conscience of society but in every well-governed State they are its best motive power. The strength, the industry and civilization of nations — all depend upon individual character... Mind without heart, intelligence without conduct, cleverness without goodness, are powers in their way, but they may be powers only for mischief. We may be instructed or amused by them. But it is sometimes as difficult to admire them as it would be to admire the dexterity of a pickpocket or the horsemanship of a highwayman."*

In Transactional Analysis, they talk of winners and losers and games people play; this is not in the sense of the terminology in sports! James and Jongeward say in *Born to Win*:

> *"A Winner is one who responds authentically by being credible, trustworthy, responsive and genuine, both as an individual and as a member of society. Winners ... without guilt, enjoy their own accomplishments. Without envy, they enjoy the accomplishments of others... The loser is self-pitying and shifts the responsibility for an unsatisfactory life onto others. Blaming others and excusing oneself are often part of the loser's games".*

Excellence in Science

For a nation to grow and advance rapidly, it has to strive for excellence in all its spheres of activity. Each individual in the society has to strive to fulfil to the maximum the promise of his or her talents and the society should provide the opportunity and the environment to make this possible. In this task, the role of educational institutions is crucial in motivating youth in its pursuit of excellence.

Among the Indian scientists, the three whom I admire most and who I think sought excellence in their own way and who have had the maximum impact on Indian science are Ramanujan, Raman and Bhabha. Srinivasa Ramanujan has been called by Mark Kac a "magical genius", a genius which makes you say: "I have no idea where these results come from". The impact of his contributions to number theory and analysis is still being felt and their *significance to particle physics* and to fast computer algorithms is still being studied. This lonely genius, who had no formal training in mathematics, and who spent time in an academic institution only during his brief sojourn in Cambridge — what was the driving force which led him to a pursuit of mathematics and not to a *more conformist* and profitable occupation? He knew he excelled in mathematics and the circumstances in Colonial India did not deter him — he worked in a clerical job in the Post Trust while he did his mathematical research in his spare time. Surprisingly Einstein was caught in a similar situation — he could not get a job in any University in Europe and ended up in the Swiss Patent Office in 1902 !

C. V. Raman, the greatest experimental physicist that India has produced did write the Civil Service Examination and became the Assistant Accountant General. For many years while he served in the Civil Service, he did research in the Indian Association for the Cultivation of Science in Calcutta — for several hours a day before he went to the office and for many more hours after the office closed. It is amazing how he found energy for both his office work and his research. Later he became the Palit Professor of Physics in the Calcutta University at half the salary he was getting as Assistant Accountant General. The great Arnold Sommerfeld said after visiting C. V. Raman in Calcutta:

> *"India had suddenly emerged in competitive research as an equal partner with her European and American sisters".*

This brings us to the one central point in the pursuit of excellence — there is nothing worth doing which is not worth doing well. People who seek excellence are thus perfectionists. Homi Bhabha was such perfectionist. The great edifice of the Department of Atomic Energy is a tribute to this versatile genius. An outstanding theoretical physicist, he decided to start and develop the nuclear science and technology activities in a country where none existed. To many, it might have looked an over ambitious aim. But he had faith in the talents and abilities of his countrymen.

Excellence does not come cheaply. Hargobind Khorana, who got the Nobel Prize for his work on genetics, spent several years of elaborate and painstaking effort putting together a synthetic gene, using chemical rather than enzymatic methods. He had taken several decades to perfect the technology of synthesising artificial ribopolynucleotides of defined sequence, which led to his outstanding final research achievement.

Integrity in Science

It is said in the *Gita (Chapter II, Verse 57)*:

यः सर्वत्रानभिस्नेहस्तत्तत्प्राप्य शुभाशुभम् ।
नाभिनन्दति न द्वेष्टि तस्य प्रज्ञा
प्रतिष्ठिता ॥५७॥

which is normally translated as : He, who is unattached on any side, who, when he comes upon good or evil neither rejoices nor is repulsed, is poised in wisdom.

This has been adapted in translation for the definition of the character of a true scientist by my friend Shri. C.V. Sundaram as:

> *"A true scientist has to be a स्थितप्रज्ञ . He is an individual with an open mind, unaffected by personal inclinations. He accepts results (or experimental observations or theoretical calculations) as they come, pleasant or unpleasant. He is not swayed by emotions of elation or disappointment. He stays steadfast and uncompromising in his search for truth.*

Velocity of Research and Development

My friends abroad often ask me why is it that our performance as Indians in India is not commensurate with their obvious talents, though we have not done badly in any field. In science and technology, the one factor that is holding us back is the low value in India of what defined many years back as the Velocity of Research & Development. This is a relative velocity and compares the speed with which we complete a project in India in a frontier area of research or in a high technology field to the speed with which our counterparts in a developed country in the West do the same project. We have the talent, we have the ideas but we seem to take 50% or a little more time for such a project, compared to a developed country.

There are many reasons — some beyond our control — for our low velocity of R & D. These include antiquated bureaucratic procedures, lack of adequate peer groups in many frontier areas, poorer scientific information access, the inadequate industrial infrastructure in the country, the export policies of developed countries — though all these are improving in recent years — and, to some extent, the technological control regimes in nuclear technology and other high technology areas. India must strive to close the gap in the velocity of R & D and then it will see rapid national development.

The Value System in Society

From the time of Jawaharlal Nehru, it has been recognised that the country's development will be driven by the growth of science and technology. And this growth will depend on the support that research and development receive from the Government and the industry and on the value system in science. The value system in science in any country is synthesized from many value subsystems. What is it that young persons value most? What is the value system of the scientific community as a whole, the Science Academies and what is the reward system in the scientific community? What is the value system of the society at large — do they value science and respect scientists? As Frederic Seitz says:

> *"The advance of science requires money given with appreciation*

(Contd. on Page 20)

OUTLAYS AND EXPE

Plan and Non-Plan Budgetary Expenditur

State/U.T.	1993-94 (Accounts)			%age to Total Budget	
	Plan	Non-Plan	Total		Plan
1	2	3	4	5	6
1. Andhra Pradesh*	*2.90	307.57	310.47	21.74	2.98
2. Arunachal Pradesh	2.39	1.59	3.98	7.29	3.17
3. Assam	16.20	48.47	64.66	8.32	17.90
4. Bihar	4.30	135.52	139.82	10.06	6.07
5. Goa	4.07	7.57	11.64	13.35	4.13
6. Gujarat	1.68	122.04	123.72	9.12	3.30
7. Haryana	4.51	60.87	65.38	14.57	5.39
8. Himachal Pradesh	5.43	13.64	19.07	7.51	6.97
9. *Jammu & Kashmir*	*3.80*	*29.76*	33.56	*10.30*	*2.47*
10. Karnataka	15.42	161.11	176.53	14.21	21.09
11. Kerala	7.54	200.51	208.05	18.47	13.66
12 Madhya Pradesh	13.45	126.04	139.49	11.47	15.19
13. Maharashtra	4.83	260.19	265.02	10.11	14.60
14. Manipur	3.52	14.09	17.61	16.32	4.19
15. Meghalaya	2.67	9.89	12.56	13.62	1.87
16. Mizoram	2.01	4.28	6.29	9.80	1.67
17. Nagaland	1.54	3.60	5.14	6.21	2.03
18. Orissa	12.86	80.91	93.77	13.83	38.36
19. Punjab	7.09	84.69	91.78	13.77	8.06
20. Rajasthan	9.78	88.45	98.23	8.11	12.16
21. Sikkim	0.32	0.42	0.74	2.27	0.44
22. Tamil Nadu	2.74	170.21	172.95	10.11	6.84
23 Tripura	1.50	5.83	7.33	5.46	1.41
24. Uttar Pradesh	12.54	261.37	273.91	11.81	10.49
25. West Bengal	6.43	196.93	203.36	12.64	22.16
26. A & N Islands	0.41	1.16	1.57	5.86	0.95
27. Chandigarh	0.51	28.85	29.36	50.59	0.79
28. D & N Haveli	0.00	0.00	0.00	0.00	0.10
29. Daman & Diu	0.00	0.46	0.46	8.37	0.00
30. Delhi	3.42	1.78	5.19	3.95	3.00
31. Lakshadweep	0.06	0.85	0.91	13.64	0.28
32. Pondicherry	1.79	4.99	6.78	14.71	3.19
STATE/UTs	155.70	2433.64	2589.34	12.15	234.89
CENTRE	157.16	357.13	514.29	24.53	257.03
GRAND TOTAL	312.86	2790.77	3103.63	13.26	491.92

Source : Annual Financial Statistics of Education Sector 1996-1997. Ministry of Human Resource Development, Department of

ITURE ON EDUCATION - III

ı Higher Education by Education Department

(Rs. in Crores)

1994-95 (RE)		*%age to Total Budget*	*1995-96 (BE)*			*%age to Total Budget*
Non-Plan	*Total*		*Plan*	*Non-Plan*	*Total*	
7	*8*	*9*	*10*	*11*	*12*	*13*
345.76	348.74	21.50	4.15	347.65	351.79	18.86
1.70	4.87	7.62	1.60	1.82	3.42	5.24
35.67	53.56	7.09	27.73	38.43	66.16	7.35
162.85	168.91	10.10	8.38	160.57	168.95	9.09
7.90	12.03	12.48	4.93	8.03	12.96	12.61
132.42	135.71	8.80	2.38	143.58	145.96	8.60
66.26	71.64	14.00	5.24	70.38	75.62	14.27
15.21	22.18	7.34	8.47	17.38	25.85	7.53
31.21	33.67	10.11	3.09	34.17	37.26	10.41
185.26	206.35	13.87	21.94	199.61	221.55	12.87
212.08	225.74	16.62	14.68	246.57	261.25	16.62
146.55	161.74	11.06	16.87	171.74	188.61	11.86
306.19	320.79	10.84	13.04	275.33	288.37	9.97
16.32	20.51	15.47	4.50	16.93	21.43	16.04
6.82	8.68	8.67	2.72	7.24	9.95	8.41
4.81	6.48	9.80	1.64	4.77	6.41	10.08
4.92	6.95	7.86	1.79	3.59	5.38	5.47
94.97	133.33	14.96	18.80	99.83	118.63	13.48
98.80	106.86	13.89	7.35	99.41	106.76	12.88
98.90	111.05	7.80	12.31	110.06	122.38	7.63
0.45	0.89	2.30	0.85	0.49	1.34	3.11
193.65	200.48	10.32	4.03	212.61	216.63	10.29
6.02	7.44	5.09	1.30	6.36	7.66	4.50
227.02	237.51	8.13	12.83	231.87	244.70	8.05
233.83	255.99	14.04	15.94	257.25	273.19	11.98
1.29	2.24	7.09	1.26	1.35	2.61	7.59
30.64	31.43	46.80	0.82	32.19	33.01	46.13
0.00	0.10	1.77	0.10	0.00	0.10	1.55
0.48	0.48	7.36	0.10	0.50	0.60	8.39
1.80	4.80	1.15	8.90	2.90	11.80	2.34
1.03	1.31	13.33	0.24	1.03	1.27	13.14
5.34	8.53	16.02	2.65	5.39	8.04	14.93
2676.13	2911.02	11.60	230.62	2809.02	3039.65	11.03
380.70	637.73	25.62	245.05	363.91	608.96	22.52
3056.83	3548.75	12.86	475.67	3172.93	3648.61	12.06

ıtion, Planning & Monitoring.

(Contd. from page 17)

> *and wisdom but the amounts must be determined by many complex factors".*

Society, of course, has also the right to demand adequate returns from its investments in science.

It is essential that we encourage all kinds of research and development — basic research, applied research and technology development. It is clear that the technological development of India in the short-term will be led by applied scientists, instrument developers and development engineers. However, our applied research edifice presently is not strong except in mission-oriented agencies like those dealing with atomic energy, space and defence. But the growth of this applied research edifice in the future will be sustained by building a strong basic research foundation *now*. It must also be realised that the boundary between basic and applied research is not sharp. The S & T community, of course, must also have a strong commitment to indigenous technology development.

Co-operation between Universities and DAE Institutions

From its very inception, the Department of Atomic Energy has espoused a symbiotic relationship between the Universities and national laboratories. Indeed writing about the Tata Institute of Fundamental Research, Dr. Homi Bhabha, the founding father of the Atomic Energy Programme in India, spelt out his philosophy in the following words :

> *"... this institute has been a constituent recognised institution of the Bombay University from the very beginning and has had close relations with many other Universities in India, so that the students of many of them have done work for the Ph.Ds of their Universities in the Institute".*

The various Units of the DAE have over time built up mutually beneficial programmes with several Universities. These include, for example, the neutron scattering studies being performed at the high flux Dhruva reactor at Trombay by scientists of different Universities in collaboration with scientists of BARC under the auspices of IUCDAEF (Inter-University Consortium for DAE Facilities). This Consortium is also spearheading the cooperation in the Synchrotron Radiation Source-based research activities which will be pursued at the electron storage ring INDUS-I now coming up at the Centre for Advanced Technology (CAT), Indore, and later at the higher energy storage ring INDUS-2.

Apart from the above activities, the BRNS (Board of Research in Nuclear Sciences) of the Department of Atomic Energy has been sponsoring research in many universities, IITs, RECs, IISc and other institutions for more than three decades. To further strengthen this link between DAE Units and teaching institutions we are also emphasizing another class of collaborative research schemes under BRNS. Its purpose will be to focus on common areas of interest to a principal investigator from a university and a co-investigator from one of the DAE Units, who shall,. however, not draw upon the BRNS funds. This kind of collaborative projects will enable the university scientists easier access to facilities in the DAE Units and the DAE Units in turn will have the benefit of interaction with University students and professors. In the IX Plan, we are also looking at the possibility of setting up joint centres with universities in specific engineering areas of importance to the nuclear programme.

In common with developed countries the situation in India is that the best technology and the best potential for developing it is in the national laboratories while the young scientific talent is substantially in the universities. India will grow to its maximum potential only when there is a strong synergistic interaction between two systems — the national laboratory system and the university system.

Economic and Technological Independence

The spirit of freedom of this country must today be expressed in a drive for economic and technological independence. This expression should not be as an opposition to trivial issues like outlets of Kentucky Fried Chicken or Pizza Hut — Tandoori Chicken and Masala Dosa are capable of taking up this kind of fight on their own. The essence of freedom is in establishing a self-reliant India in areas of high technology in the face of international efforts by some countries to hinder and push back our achievements in these strategic areas through technology control regimes and punitive threats.

When his biographer Kameshwar C. Wali asked the great theoretical astrophysicist Subramaniam Chandrasekhar how was it that in the 20s and 30s, India produced a number of great scientists like Raman, Bose, Saha and Chandrasekhar himself, he said that in those days: *"There was need for self-expression as a part of* *the national movement... to show the West that in their own realm, we were equal to them*". Dr Homi Bhabha's motivation for starting the Tata Institute of Fundamental Research in 1945 — *that scientists for manning the unclear power programme should be available within the country without looking for foreign assistance* — I consider it part of the Quit India movement of the early 40s.

The Purpose of University Education

Talking about the purpose of University education, Alfred North Whitehead says :

> "*The tragedy of the world is that those who are imaginative have but slight experience, and those who are experienced have feeble imagination. Fools act on imagination without knowledge, pedants act on knowledge without imagination. Youth is imaginative and the task of a University is to weld together imagination and knowledge*".

It is my view that welding together of imagination and knowledge not only benefits the individual, but also leads to cultural growth of the society. Yet today, in the Indian context we need to go beyond this and design our university education so that it also paves the way for building the nation and for improving the quality of lives of the citizens in the country. The Indian youth must be encouraged to develop to its full potential in every field — be it science, management, commerce or sports. Then, we will have leaders who will take India to commanding heights in the comity of nations. We have had such leaders in the past, particularly during the struggle for freedom and, I am sure, more such leaders will emerge in the future.

NATIONAL INSTITUTE OF EDUCATIONAL PLANNING AND ADMINISTRATION

17-B, SRI AUROBINDO MARG, NEW DELHI - 110016

Applications are invited for 1 post of **Senior Fellow** to be vacant w.e.f. 1.8.1997.

Scale of Pay : Rs 4500-150-5700-200-7300
Age : *Preferably below 50 years*

Qualifications

Essential

i) Should have consistently good academic record with first or high second class (B+) Master's degree in the relevant field of study or an equivalent degree of a foreign university;

ii) *Either* a doctorate degree of an Indian *or* foreign university or published research work of a high standard *or* outstanding academic contribution in the relevant field(s); and

iii) At least 10 years' experience of teaching/conducting and/or guiding research in fields related to educational planning and administration

OR

At least 10 years' administrative/professional experience at senior level in government in relevant field.

Desirable

Specialisation in *one or more of the following areas* :

i) Institutional planning and school based management.

ii) Educational administration with special reference to organisation, structure and functioning of school system

iii) Training methods and organisation of long term training programmes for national and international educational functionaries

Deputation/Transfer

(a) Officers/Academics from Central or State Governments, Universities, Professional and Research Institutions and bodies

i) holding analogous post on regular basis, or

ii) with 5 years regular service in the pay scale of Rs. 3700-5000 from government source or 5 years regular service as Reader or in the post in the pay scale of Rs 3700-5700 or equivalent, and

(b) Possessing qualifications prescribed for direct recruits.

(Period of deputation shall not ordinarily exceed 4 years)

Note 1 In case of persons drawn from administrative cadres the condition (ii) above will not apply but there should be evidence of academic and innovative contributions in the field of educational planning and administration.

2 The benefit of added years of service under Rule 30 of CCS (Pension) Rules, 1972 *shall be admissible on fulfilment of all the conditions under these rules* in the case of direct recruits

3 Candidates already in employment under government/semi government organisations/autonomous bodies should send their applications through proper channel

4 Other things being equal, preference will be given to SC/ST candidates.

5 Candidates from outside Delhi called for interview will be paid single return second-class train fare by shortest route.

Applications from candidates fulfilling the required eligibility conditions alongwith attested copies of certificates, a recent passport size photograph and a non-refundable crossed postal order of Rs. 20/- (not required in the case of SC/ST candidates) drawn in favour of the Registrar, National Institute of Educational Planning and Administration, 17-B, *Sri Aurobindo Marg, New Delhi - 110016 should reach him* **in one month** of the publication of this advertisement.

The Institute reserves the right to alter/modify any of the terms and conditions regarding Qualification/Experience.

REGISTRAR

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GRI Organises Environmental Awareness Programme

The Department of Applied Research, Gandhigram Rural Institute, Gandhigram, recently organised a two-day orientation-cum-environmental awareness programme in two service villages of Gandhigram Rural Institute. The purpose of the programme was to generate knowledge and awareness among the people and to evolve proper strategies for the preservation and protection of the environment. During the course of the orientation programme, the undergraduate and postgraduate students of the Institute were given intensive training to develop research skills and expertise in undertaking field research in rural areas. The faculty members along with the research staff of Rural Extension and Evaluation Cell (RE & EC) prepared village maps which were used by the students for locating and numbering the households. The students were initiated into field work under the supervision of the faculty members of the Department. They were directed to contact the households and conduct field interviews after identifying the respondents. A field tested precoded Environmental Awareness Schedule prepared in mother-tongue, Tamil, was used for the collection of data. Special care was taken to develop the rapport-building, communication and recording skills of the students during the field interviews.

An Environmental Awareness Camp was also held at the end of the orientation programme with a view to inculcate interest and to create knowledge and favourable attitudes towards environment among the rural people. Lecture-Demonstrations were offered on environment-related issues such as rural sanitation, water borne diseases, and evil effects of drug abuse and alcoholism. Based upon the discussions and village surveys, strategies such as sinking of soak-pits for the drainage of waste-water and measures to keep the village surroundings neat and clean were worked out.

Energy Crisis and Environment

Loyola Institute of Frontier Energy (LIFE), which is an Interdisciplinary research facility at Loyola College, Chennai, recently organized a National Conference on "Energy Crisis and Environment". The focus of the conference was on Non-Conventional Energy, Environmental Energetics, Environmental Bio-technology, Environmental Engineering, Environmental Chemistry, Environmental Management, and Environmental Ethics. Scientists and researchers from universities and research labs from all over India participated in the conference. 12 invited papers and over 50 contributed papers based on original research were presented in various technical sessions of the conference.

The inaugural session was presided over by Mr. Robert Silberstein, Political and Economic Officer, US Consulate, Chennai while Fr Donatus Jeyaraj, SJ, the Provincial Superior of Madurai Jesuit Province, was the chief guest. The keynote address was delivered by Prof. P. Ramasamy, Vice Chancellor, Alagappa University, Karaikudi and the Valedictory function was presided over by Mr A. Balraj, Chairman and Managing Director, Tamilnadu Energy Development Agency, Chennai. All the dignitaries reiterated the need of non-conventional energy and a forum, such as LIFE, for inter-disciplinary research for energy conversion which should be eco-sensitive

Rev Dr V S. Manickam, speaking on biodiversity, revealed that there were 1000 species of ferns in India among 12,000 species in the world and 45 species in the Western Ghats were on the verge of extinction. Rev Dr S Ignacimuthu stated that physical, biological and cultural components of the environment needed to be considered and the life-style of mankind could be redesigned. Dr Vijayaraghavan described the electrocatalytic reduction of CO_2 as a feedstock for the future. Dr. Haridasan reviewed the status of the solar energy materials and emphasized the role of solid state electrolytes and non-metallic intercallation electrodes for energy storage devices. Dr Salgare described the effects of industrial pollution on the vegetation of Ulhas, Kalu, Potalganga rivers in New Bombay. He indicated that Kalu river had high levels of lead and other toxic heavy metals. Dr L V Krishnan stressed on communication and acceptability of environmental solution to fight the energy crisis.

Indigenous studies on risk analysis and communication was demanded. The talk on petroplants by Dr Sharma pointed out the plants belonged to the family of Euphoribaceae, Cactaceae and Asclepiadaceae and he further provided a long list of plants which could be considered as petroplants. Dr Namasivayam described the agricultural solid waste recycle technology for industrial effluent treatments. Activated carbon made from peanut hull, waste banana pith, orange peels or coir pith were capable of removing dyes and toxic metals from waste waters. Dr Nagaraja discussed the importance of trace metal analysis taking molybdenum (Mo) as an example. Total Mo and available Mo content in a particular soil was found to be 4.20 and 0.29 ppm respectively Mo content in soil, azolla and rice-roots, grain and hull were reported. Mrs Chengappa stressed the role of NGOs in nature conservation and the roles of WWF, the Bombay Natural History Society, KNHS (Kerala), etc Bioethics Education might include the topics related to medical, environmental, animal rights, property rights of natural resources, intellectual property rights, and genetic ethics in the curriculum, according to Prof Jayapaul Azariah. The environmental ethics as inscribed in Indian ethos had been reviewed. Dr Selvanayagam's papers dealt with the study of aquatic pollution due to heavy metals and their effects on aquatic animals. Hydrocarbon content and chlorophyll, flouride toxicity, and tannery effluents were topics of interest.

The conference was sponsored by University Grants Commission (UGC), Department of Science and Technology (DST), Council of Scientific and Industrial Research (CSIR), All India Association for Christian Higher Education (AIACHE), Tamilnadu State Council for Science and Technology (TNSCST), Central Electro-Chemical Research Institute (CECRI), and Indian National Science Academy (INSA).

Presentation Techniques for Educational Broadcasters

The Commonwealth Educational Media Centre for Asia, in collaboration with Electronic Media Production Centre, IGNOU, recently organised in New Delhi a three-day Workshop on the "Presentation Techniques for Educational Broadcasters". It covered various aspects of presentation, like talks, demonstrations, experiments, interviews, discussions, etc as relevant to educational television.

Leading media experts shared their expertise on various formats. Mr. Sunit Tandon, a noted media and stage performer, talked about audio and video presentations, giving useful tips on how to perform better with the microphone and before the camera. While discussing the illustrated talks and demo's, Ms. Jai Chandiram, Director, Electronic Media Production Centre, IGNOU, made useful suggestions on how greater visual impact could be brought about. For the interviewing techniques, the well-known media personality, Mr. Kamleshwar emphasised that an interview was not a simple exercise of asking questions and getting answers, but needed sharp skills to get the best out of a guest within a few minutes at the disposal of the interviewer.

Mr. Gopal Saxena, Director, CEMCA, in his concluding remarks, observed that the term 'presentation' had a wider relevance and application-much beyond broadcasting. Many others, like academics, research scholars, professionals and executives, who are often called upon to present their case studies and reports etc., needed to be excellent presenters for making an impact, he added.

Mr. K. Ravi Kanth, Coordinator, pointed out that the present training programme was an outcome of the recommendations made at an CEMCA meeting with the Directors of Institutes of Correspondence Courses and Open Schools and the findings of a needs assessment survey.

14 participants, belonging to Yashwant Rao Chavan Maharashtra Open University, Nashik, Dr. B. R. Ambedkar Open University, Hyderabad, Utkal University, Bhubneshwar, Kota Open University, Kota, University of Delhi, All India Radio, Central Institute of Educational Technology, Delhi and Central Institute of English and Foreign Languages, Hyderabad attended the workshop.

Teacher Education Curriculum Framework

The Dept. of Education of Shivaji University, organised a two-day workshop for dissemination of The NCTE's Teacher Education Curriculum Framework and the application of the competency based teacher education programme to the teacher-educators of its 28 affiliated B.Ed. colleges.

Prof Dr. R. B. Dewasthalee, Head of the Department, spoke about the NCTE, its concern for improving the present teacher education programme. He introduced the "Discussion Document — Curriculum Framework for Teacher Education".

Dr. T. M. Patil defined competency based teacher education (CBTE) and explained the theoretical background of CBTE. The participants were made aware of the ten areas of competencies and the specific competencies identified in each of these ten areas by Dr. C M. Yeole This was followed by a lecture by Dr. N.R. Sapre, comparing the present Teacher Education Programme (TEP), with that proposed by NCTE - the CBTE highlighting the 13 gaps existing in the present TEP.

The 3 gaps found to be most prevalent were identified viz. Diversity in TEP & the school system; Diversity in theory & practical components of TEP; and Lack of inculcation of professional values. The participants planned to work on the three gaps and identified the nature of diversities in each gap. Based on the nature of the diversity, they identified the competencies that were required to be developed in the student-teachers for reducing the gap. Having identified the competencies they later developed programmes based on the principles of CBTE which could be easily incorporated in present TEP.

Shankar Puraskar for Shri Pande

The K. K. Birla Foundation, in June, 1992 instituted an important award Shankar Puraskar named after Aadi Shankaracharya, to honour an outstanding work published in Hindi on Indian philosophy, culture and art during the last 10 years by an Indian citizen. The award carries a cash prize of Rs. 1.50 lakhs.

For the year 1996, this Shankar Puraskar has been given to Shri Brij Mohan Pande for his work "*Puratattva Prasang*".

Puratattva Prasang is a collection of articles on wideranging themes: the magnificent eleventh century Siva temple at Bhojpur near Bhopal ascribed to Paramara Bhoja, the Bhopal lake and a historical account of water harvesting systems, masons', names and marks, the Indian baroque churches of Goa and the Parsi monuments in Diu. Well-researched and authoritatively written, the book is considered as a significant contribution to archaeological literature. It presents archaeological material and data with exactitude, supplementing it with relevant historical information.

University PROs Forum

A National Association of University Public Relations Officers (NAPRO) has recently been formed at Kottayam with the objective of promoting professional development and safeguarding the interest and rights of university PROs. The University PROs met at the three-day orientation programme on "New Higher Education : Evolving Role of Public Relations" organised jointly by the Association of Indian Universities, New Delhi, and Mahatma Gandhi University, Kottayam.

The Association urged the University Grants Commission (UGC), Association of Indian Universities (AIU), Ministry of Human Resource Development, and respective States to implement uniform UGC pay structure for PROs of all Indian Universities and to declare Public Relations as a 'thrust' area in the UGC Plan. The Association also demanded better service conditions and career advancement programmes for the PROs.

NEHU Plans Environmental Courses

The North Eastern Hill University (NEHU) proposes to introduce courses on environment at the postgraduation level. This was revealed by the Vice-Chancellor, Prof. Barister Pakem, while inaugurating a two-day seminar on 'environmental education curriculum' organised by the NEHU Education Department in Shillong recently. He said environmental courses would also be introduced at the college levels

Expressing concern over environmental degradation, Prof Pakem said the preservation of flora and fauna in the North Eastern Region was much better than in other parts of the world, though some of the species were under threat of disappearance

Prof. K. S. Lyngdoh of NEHU Education Department spoke on environmental degradation caused by the fast depletion of ozone layer and pollution.

Haryana Lays Stress on Tech. Education

The Haryana Government proposes to spend Rs. 59.61 crores on promotion of technical education during the current financial year to provide more employment opportunities to the unemployed youth and skilled hands to the industry. This was announced by the Chief Minister, Mr. Bansi Lal, while inaugurating the new building of Shri Baba Mastnath Senior Secondary School at Rohtak recently.

He said that this amount covered the World Bank aided schemes. While emphasising that the Government was laying stress on the promotion of technical and vocational education, he said it would not be possible to provide government jobs to all the unemployed. He urged the youth to go in for technical education as the government was providing financial assistance and other incentives to such youth to set up their own ventures.

He disclosed that the Government was trying to improve the quality of education in the State. Rs. 70.20 crores had been earmarked for the promotion of education under the plan scheme during the current financial year.

The Government was providing several incentives to students belonging to the weaker sections of the society to attract them towards educational institutions.

Awards for Doctoral Research in Management

The P.D. Agarwal Foundation, created in the memory of Shri P.D. Agarwal who built up the Transport Corporation of India-Bhoruka Group of Companies and a number of educational and philanthropic institutions in India, proposes to give awards to doctoral students in management to enable them to complete their field work. About ten awards will be given this year. Each award will be worth a maximum of Rs. 20,000.

The Foundation invites applications from doctoral candidates at any Indian university/institution with a recognised Ph.D. Programme (or equivalent like the Fellow Programme at the IIMs).

The awards are intended for individuals who have just completed their research proposals and are about to start (or have just started) their data collection.

The last date for receipt of applications is August 16, 1997. Further details may be obtained from Prof. Rishikesha T. Krishnan, Corporate Strategy & Policy Area, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore-560 076.

Private Medical Colleges in Maharashtra

The Maharashtra government is reported to have decided to keep 80 per cent seats in the open category and 20 per cent seats for Non-Resident Indian (NRI) students in private medical colleges. This was stated by Minister for Medical Education, Dr Daulatrao Aher in the legislative assembly recently.

He said that as per a circular sent by the Central Government, the fees applicable for the open category seats in private medical colleges shall be the same as charged to students in government aided medical colleges. While in the case of NRI students the fee should be of Rs. 5 lakhs.

News from Agricultural Universities

TNAU Plans Medicinal Garden

The Tamil Nadu Agricultural University proposes to develop a medicinal garden aimed at generating more foreign exchange. According to Dr. C. Ramaswami, Director for the Centre for Soil and Crop Management Studies, the State had the potential to rake in foreign exchange in this area. Export of medicinal plants fetched annually Rs. 163 crores and it was expected to touch Rs. 200 crores. The demand for herbs and exotic spices in the international market was 200 tonnes, but the export was only 60 tonnes, he said.

Dr. Ramaswami who presided over the inaugural of a training programme on hi-tech agriculture for the agricultural extension officers of Canara Bank at the varsity premises, said increased use of hi-tech agriculture would result in higher productivity, and more foreign exchange with a boost in exports. Manpower and technology were abundant in the country. An optimum use of both was needed and export-oriented productivity must be stressed. Hi-tech agriculture had made a significant progress and helped in minimising poverty and generating more employment opportunities.

There were 1,300 orchid species in the country, but commercial cultivation had not spread wide enough compared with some of the other Asian countries who were way ahead.

On the harmful effects of pesticides, Dr. Ramaswami said stress had been laid on bio-control agents after the discovery of DDT in food products and even in mother's milk.

There were pilot plants in Coimbatore and Madurai for producing bio-control agents.

MPKV Convocation

"To meet new challenges and advanced technological requirements of high tech agriculture and to prepare the graduates to take challenges in the Frontier line disciplines, we shall be in need of agricultural graduates well versed with modern science, computer applications, informatics, biotechnology, molecular biology, integrated pest management, integrated plant nutrient management, agri-business, food technology and efficient crop production technology", said Dr. R.S. Paroda, Director General, ICAR. He was delivering the convocation address at the Mahatma Phule Krishi Vidyapeeth in Rahuri recently.

Dr. Paroda said that the Council had taken initiatives in promoting excellence in agricultural education, research and extension. There was no alternative but to work with sincerity and dedication to improve agricultural productivity, sustainability and household food and nutritional security. He impressed upon the new graduates to be inquisitive and learn more about new technologies and options.

For motivating the faculty, he said that the Council was providing support for their participation in the national and international seminars/symposia, summer/winter schools, etc. Similarly, to promote excellence in teaching, five faculty awards of Rs. 10,000 each had been initiated by the Council per year at each of the universities. At the national level, five best teacher awards of Rs. 20,000 each were now being given biannually. For consultancy, contract research and training courses, a number of incentives had been given recently by the Council in order to promote best talent in the system and also to generate resources to improve infrastructure and working facilities, he added.

To make agriculture productive and sustainable Dr. Paroda stressed the need to maintain soil fertility by developing appropriate technologies. He said, for sustainability and profitability, we must go in for diversification on agriculture and restructuring of our cropping systems where we had comparative advantage. Maharashtra had already become a horticultural state in India with great potential for export. The processing and post harvest technology research should aim now to reduce the heavy losses. Value addition research should also ensure proper nutritional quality. Rather than just exporting directly our agricultural produce we should take advantage through export of value added products, he stressed.

Dr. Nerkar, Vice Chancellor, highlighted the progress made by MPKV in the field of Teaching, Research and Extension Education. He mentioned that a large number of students from MPKV had been selected for different positions through Maharashtra Public Service Commission. He said that the university had supplied horticultural quality plantation material to the farmers who had participated in the horticultural development programme of the State.

For quick transfer of agricultural technology, he stated that the university proposed to establish agricultural information centre at the pilgrimage places Shirdi and Pandharpur. As more than 50% of the work of the farms was done by women, the university also proposed to establish training centre for farm women to prepare women extension workers.

HAU Kisan Mela

The Delhi Chief Minister, Mr. Sahib Singh Verma, said that efforts for transfer of agriculture technology should be geared up so that more farmers could adopt the newer technologies. This would not only support the farmers but the whole nation would be benefited by way of increasing its exports of the agricultural products. He was speaking after inaugurating the two-day Kisan Mela of Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) in Hisar recently. He said that agricultural universities all over the country had done a commendable job by way of evolving very useful techniques. This was also evident from the fact that India which was once deficit in foodgrains had started supporting other underdeveloped and developing countries. But he regretted that all farming techniques had not yet percolated to all sections of the farming community.

Mr. Verma said that in the present scenario the farmers should concentrate on raising value added crops including floriculture, mushroom cultivation. He said the farmers of Haryana and Delhi States should get the locational advantage of their accessibility to the Delhi market.

While complimenting the agricultural scientists and the toiling farmers of the state, the Chief Minister proposed to the PHDCCI to institute awards worth one lakh each for scientists and the farmers to recognise their services to the nation.

Prof. J.B. Chowdhury, Vice Chancellor, who presided, said that the university since its inception in 1970 had evolved over 125 high yielding and disease resistant crop varieties and very useful techniques with the result the state became surplus in foodgrains and also started contributing to the central pool.

He said with the globalization of the market, new vistas had opened up for the farmers to sell their produce at competitive price But for this the farmers would have to ensure quality of their produce which was possible only with the adoption of scientific ways of farming He urged the farmers to develop rapport with the university scientists and get themselves benefited of their expertise

Prof. Chowdhury said that in view of the hazards caused with the use of agro-chemicals and chemical fertilizers, emphasis had been laid on evolving and popularizing ecofriendly and economically viable technologies that included organic farming and integrated farming systems. He said priority was being given to bio-technology, food and post harvest technology.

The Vice-Chancellor hoped that the linkage between the university and the industry would benefit the farmers as well as the industrialists.

The Mela organised jointly by the CCSHAU and the PHD Chamber of Commerce and Industry (PHDCCI) focused on latest developments in agro-exports, harvest technologies, food processing, marketing of agro-products apart from popularising among the farmers latest agriculture and animal husbandry techniques and technologies developed by the university.

A seminar on processing and marketing of agro-products was also organised on the occasion in which representatives of industry, agricultural scientists and officials of the PHDCCI discussed the prospects of industry-agriculture linkages.

IRRI Aid for TNAU

The International Rice Research Institute, Philippines, is reported to have extended an assistance of Rs. 45 lakh to the Tamil Nadu Agricultural University (TNAU) for carrying out the second phase of rise research through the Tamil Nadu Rice Research Institute, Aduthurai. Dr. A. Abdul Kareem, Vice-Chancellor, said that the first phase of the mega project, called "reversing trends of declining productivity in intensive irrigated rice system" was implemented during 1994-1996.

The second phase would be implemented in the Cauvery delta zone from 1997 to 2000 AD. During his recent visit to the Philippines to attend the Irrigated Rice Research Consortium meeting organised by the IRRI, Dr. Abdul Kareem was nominated as a member of the steering committee of the mega project.

News from UGC

Countrywide Classroom Programme

Between 1st and 7th May, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

1.5.97

"Optical Repeaters"
"Art and the Meeting of Religions"
"Educational Values Through English"

3.5.97

"Algorithms"
"Population Status and Problems"
"Orchids : The Royal Plant"

4.5.97

"Polo The Medern Technique-II"
"The Story of Indian Painting-1: Origins Cine Arts"
"Affinities and Differences: The Two Martial Arts of India"

6.5.97

"Haridyakunj: The Soul of Free Movement"
"The Dimension of Technology (Lecture b Dr. Abdul Kalam)"
"Wooden Essence: Sandal"

IInd Transmission

1.00 p.m. to 2.00 p.m.

1.5.97

"Human Genetics-1 : "46"
"Geo-Engineering Studies in Coal Mines"
"In Focus"

2.5.97

"Special Care for Special Children"
"A Discussion on Policy for Women-II"
"Plants in our Neighbourhood -II"
"Role of Press and Communalism"

3.5.97

"Speech Communication: From Individual to Public"
"Understanding Cinema-XV: Scene Analysis-II (Clear Skies)"

4.5.97

No Telecast

5.5.97

"Study of Forced Oscillations-II"
"International Business Curriculum-I"
"Role Model: An Uncommon Commoner"

6.5.97

"Gravimetric Estimation of Barium"
"Ways of Thinking -SEP-V: Play of Light"
"Medicinal Drugs: Is The Medication More Lethal"

7.5.97

"Buddhism in Andhra Pradesh-V: Contemporary Society"
"Little Valley of Kings-II"
"Biological Heart Valves"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

2.5.97

"भारत की सांस्कृतिक धरोहर: सीतामऊ"

5.5.97

"औद्योगिक क्षेत्र में मानवीय संबंध – 4 : प्रशिक्षण"

"उद्यानिकी का सौंदर्य पक्ष"

7.5.97

"संगीत ताल – 1"
"प्राचीन यूनान की कुछ झलकियां"

SMT PARVATIBAI CHOWGULE CULTURAL FOUNDATION'S
COLLEGE OF ARTS AND SCIENCE,
MARGAO-GOA-403 601.

Applications with full bio-data are invited for the following posts so as to reach the Principal within 15 days from the date of publication of this advertisement. Applications must be accompanied by certified copies of marks sheets of all the examinations from S.S.C. onwards.

A. Posts of Lecturers reserved for SC/ST candidates:

First Advertisement

i) Full Time Lecturers

Physics, Mathematics - two posts each
Computer Science - Software - two posts
- Hardware - one post
Chemistry (Physical), Zoology }
Botany, Hindi, Geography, - one post each
Economics

ii) Lecturers on lecture basis :

Physics, Botany, Computer Science
Geology, French, Geography - one post each

B. Posts of Lecturers under the General Category for UGC Sponsored Vocational Courses, on lecture basis :

Electronics - two posts
Computer Science (Software) - one post

C. Posts of Lecturers reserved for SC/ST candidates :

Second Advertisement

Botany, Geology, Physics, Hindi }
Psychology, Chemistry, Computer } - one post each
Science

D. Posts of Lecturers reserved for SC/ST candidates :

Third Advertisement

Zoology, Botany, Chemistry, Sociology, Konkani
Computer Science - one post each

Minimum Qualifications :

(i) For the Post of Lecturer in Computer Science :

SOFTWARE :

(a) First Class B.E/B.Tech. in Computer Science with two years experience of teaching/research/industry and NET/GATE OR

(b) M.E./M.Tech. in Computer Science with 55% marks and NET/GATE

OR

(c) MCA/M.Stat/M.Sc. in Computer Science with 55% marks and NET/GATE

HARDWARE :

(a) First class B.E./B.Tech. in Electronics with two years experience of teaching/research/industry and NET/GATE

OR

(b) M.E./M.Tech. in Electronics with 55% marks and NET/GATE

OR

(c) M.Sc. in Electronics with 55% marks and NET/GATE

(ii) For the Post of Lecturers in Other Subjects :

(a) A Master's degree of a recognized University in the relevant subject with eight papers and atleast 55% marks or its equivalent grade and NET

(b) Desirable qualifications. M.Phil. or Ph.D. Degree in the relevant subjects

(iii) For the Posts of Lecturers under UGC sponsored Vocational Courses :

Qualifications are the same as for lecturers in Computer Science (Software and Hardware)

Candidates for all the posts must have consistently good academic record.

Scale of pay and terms and conditions of service are those laid down by the Goa University, Directorate of Higher Education, Panaji and other competent authorities as decided from time to time

Applicants who are already employed shall forward their applications through proper channel and shall account for breaks, if any, in their academic career

For posts under (C) and (D), only SC/ST candidates from the State of Goa need apply. If suitable SC/ST candidates are not available, the existing incumbent may be considered for continuation for one academic year

For posts under (A), if suitable SC/ST candidates from the State of Goa are not available, candidates from the open category may be considered for appointment for one academic year on temporary basis

For all posts if candidates who have passed NET/SET are not available, other candidates may be considered for appointment on purely temporary basis, initially upto the end of the academic year

V.R. SHIRGURKAR
April 7, 1997 **PRINCIPAL**

BOOK REVIEW

A Useful Text Book

M. L. Bhatia*

Arun Monappa and Mirza Saivadain. *Personnel Management* (second edition). New Delhi, Tata McGraw Hill Co. Ltd. 1996. Pp ix+416. Price Rs. 120/-

The present book, which is the 2nd (revised/updated) edition and includes a chapter on quality of work life, has 20 chapters. The first chapter reviews the theories of management, divided into rational and humanistic approaches. The two approaches are compared and differences highlighted. Some (so called) environment dependent approaches are also briefly presented. The second chapter presents theories of motivation; both content and process theories are discussed. Some of the recent attempts in motivating employees like job enrichment, quality circles, work redesign, flexitime, etc are also discussed. Though the chapter concludes by raising some issues concerning money as a motivator and the linkage between motivation and productivity, the subject could have been more adequately discussed.

Chapters 3 and 4 present profiles of Indian managers and the Indian worker respectively. The former discusses some research studies (pretty old ones, the latest two being in 1983 and 1985) conducted in India in this respect. The latter dealing with the profile of the Indian Worker includes a discussion about aspects like educational skill, background, commitment and adjustment, absenteeism, mobility and occupational aspirations, job security, unionisation, etc. The chapter concludes with a brief profile of the Indian worker.

Chapter 5 focuses on the scope and organisation of the Personnel Function. The matters like linkage between HRM and corporate strategies, role of personnel in the organisation, origin and growth of personnel function in India, personnel policies, objectives of personnel function, and personnel practices in relation to various types of firms are discussed. Further, the chapter discusses about the positioning of personnel department in the overall structure of the organisation and highlights the increasing importance of personnel management. The chapter also includes a case study. Chapter 6 has its spotlight on Manpower Planning. The objectives and forecasting of manpower planning, manpower planning process, and the concepts of job analysis and job description are explained. This chapter also includes a brief discussion about the sources of external labour supply.

Chapter 7 explains the process and methods of personnel management. Topics like recruitment; selection, including selection methods; various kinds of tests; interviews; placement etc. are explained. This chapter also has a case study. The next chapter delving in training and development covers planning and training activities, need for training in industry, organisational problems in training, training policy, training methods, organisation for training, evaluation of training and concepts relating to human resource development. This chapter is supplemented by an in-basket game (exercise). Chapter 9 deals with Performance Appraisal and discusses aspects like setting the culture for evaluation, methods of performance appraisal and the problems in the performance appraisal process. The various techniques/approaches to performance appraisal, including Management by Objectives, are briefly discussed.

Chapter 10 deals with Internal Mobility. It discusses the need for internal mobility which may be prompted by promotion, demotion, transfer, and separation of personnel. What effects internal mobility has on industrial relations is also briefly discussed. This chapter is followed by a case study. The next chapter deals with Wage and Salary Administration. The principles of wage determination, matters related to administration of wages and salaries, and provisions of various legislations relating to wages are described. The chapter also examines various issues relating to wages. The various methods of wage payment, including incentive plans, are briefly described. The next chapter presents a discussion on welfare and working conditions and discusses the various issues relating to these aspects. Various laws concerning statutory welfare of employees e.g. the Factories Act, Employees State Insurance Scheme etc. are explained, besides a discussion and some comments on non-statutory welfare measures adopted by some Indian enterprises. It concludes with a brief discussion about the work environment and

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**Professor of Management, School of Management Studies, Indira Gandhi National Open University (IGNOU), New Delhi.*

the related Arousal Hypothesis.

Chapter 13 deals with Employee Grievances. It covers approaches to grievance machinery, nature and causes of grievances, grievance procedure, and grievances and industrial relations. The next chapter i.e. chapter 14 focuses on Workers' Participation in Management. What is meant by participation is explained. Some research findings on participation are also presented. It also examines the effectiveness of workers' participation in different settings. The chapter concludes with a short description of workers' participation at TISCO.

Chapter 15 highlights the role of communication in organisations. It discusses the formal and informal communication, channels of communication, communication networks and the process of communication. Chapter 16 presents some Research Approaches to Personnel Function. It discusses the various methodologies for undertaking research on the topics relating to personnel. Chapter 17 deals with Personnel Audit and Information Systems. The role and content of Audit are briefly explained. The various indicators of performance of the personnel function in relation to auditing and reporting are examined.

Chapter 18 looks at the ethical and social responsibility side of the personnel function in the broader context of social responsibility of business. It examines the profit ethic and explains the concept of trusteeship of Mahatma Gandhi. The relationship between the corporation and its employees is discussed at some length. The chapter concludes with a discussion about the corporation and social environment, including the technique of social audit. Chapter 19 deals with Quality of Work Life (QWL). It traces the evolution of QWL in the Indian context. Some techniques for improving the quality of life, such as flexitime, job sharing, telework (or telecommuting) etc are also discussed. The book concludes with a chapter on the future of personnel function. It has its focus on the history of personnel and what looks life the future of personnel function.

The book is purported to serve the needs of students preparing for MBA and other professional examinations. It would have been more helpful if more detailed contents (in addition to short contents already given) had been provided so that anybody reading the book would know at a glance what exactly is covered in a particular chapter without turning too many pages. Further, detailed contents could have been divided into parts (or sections), comprising different themes of the whole subject. Though some chapters include case studies, they are quite few. Some more case studies (short and comprehensive) could have been included.

Summary and review exercises are provided at the end of each chapter; some suggested readings are also provided. The Bibliography given at the end is quite comprehensive. The 'author as well as subject indexes' provided at the end of the book should be helpful. A "glossary" at the end of the book would have enhanced the utility of the book.

The second edition of the book has been brought after a considerable lapse of nearly 15 years. Revision in fact is required every three years. Much water has flown in the river during this period. The book captures some of the developments during this period. (Some others which could have been considered are alcoholism, drug abuse, etc). Though the term Human Resource Management is now widely used, the continuation of the title of the book suggests that the authors, probably, wanted to maintain the identity of the book. Seemingly, the authors' intention was to confine the book to just Personnel Management, hence issues like collective bargaining, trade unions, etc have been excluded.

It is unfortunate that the books on Personnel Management in general do not adequately delineate or highlight the differences in approaches or techniques in managing personnel at the worker level, personnel at the supervisory level, and personnel at the middle management level. And this book is no exception.

The subject matter relating to discipline' could be further strengthened and a section on coping with difficult employees, and counselling could be added. Similarly, a chapter on managing conflict, team building, technical change and manpower development, career development and pathing, linkage between personnel management and human resource development (HRD) could be added or matter relating to these topics strengthened at appropriate places. The coordination aspects of personnel function need to be dealt with in the chapter on communication. If two annexures — one listing important organisations in Personnel Management area, and the other listing current literature (research-oriented journals, and management-oriented journals in India, at least) are added, they would be greatly welcome to professional readers.

The book is a useful text book on personnel management. A particular merit of the book is its very reasonable price and that too with fairly good quality of paper. Hence, the book should be easily accessible to a large body of students and other readers for its affordable price.

EDUCATION NEWS INDEX

A list of select articles and editorials on education from newspapers received in the AIU Library during March 1997

EDUCATIONAL PHILOSOPHY

Das, Sana. Humanise education. Deccan Herald 16.3.97.

REAL EDUCATION (Editorial). **The Tribune** 13.3.97.

EDUCATIONAL PSYCHOLOGY

Anand, Navneet. Beating the boards. Indian Express 4.3.97.

Baig, Nasira and Geetha, CV. Helping adolescents to cope with life. **The Hindu** 4.3.97.

Dandapani, S. When knowledge becomes a burden. **The Hindu** 18.3.97.

Karimulla Basha, S. Learning the natural way. **The Hindu** 18.3.97.

Kumar, Nita, Stage coach. **The Pioneer** 12.3.97.

Shamala, M P. Motivating the student. **Deccan Herald** 3.3.97.

Swaminathan, Mira. Getting it right. **The Hindu** 9.3.97.

UNEDUCATING RITA (Editorial). **The Times of India** 15.3.97.

Verma, C D. Tradition recalled. **The Pioneer** 12.3.97.

EDUCATIONAL SOCIOLOGY

Joshua, Anita. The die is caste. **The Hindu** 1.3.97.

Murthy, Laxmi. Cry, the beloved campus. **The Statesman** 9.3.97.

Rahul Arun. Where caste disturbs class. **The Pioneer** 5.3.97.

EDUCATIONAL POLICY & PLANNING

Akila, S. Alternative to the gurukula ? **The Hindu** 9.3.97.

Sethi, Sunil. Focus on education, not computers needed. **The Tribune** 9.3.97.

EDUCATIONAL ADMINISTRATION

Abhishek Singh. The road to quick money. **The Pioneer** 12.3.97.

Bal Krishna. SC stresses merit in admission tests. **The Hindustan Times** 3.3.97.

Janakiraman, S. The burden of numerical strength. **The Hindu** 11.3.97.

Joshua, Anita. Campus puzzle: college or clones ? **The Hindu** 10.3.97.

Parthasarthy, Y G. A campus away from campus. **The Hindu** 11.3.97.

Pinto, Ambrose. Seeking a quality revolution. **Deccan Herald** 16.3.97.

Ravi Kumar, T. Low salary low morale. **The Hindu** 18.3.97.

Sequeira, Devika. Goa : VC should improve administration first. **Deccan Herald** 19.3.97.

SHAME AND scandal (Editorial). **The Statesman** 15.3.97.

Sikka, Parminder and Shrivastava, Ritu. Whither education ? **The Pioneer** 19.3.97.

THE SCOPE of govt academic partnership (Editorial). **The Hindu** 5.3.97.

Verma, Pragti. Teaching what they practice. **The Economic Times** 4.3.97.

WORKING KNOWLEDGE (Editorial). **The Times of India** 22.3.97.

EDUCATION & POLITICS

Gupta, Sanjay. School for scandal. **The Telegraph** 16.3.97.

Muzaffar Ali. The way we were. **The Telegraph** 16.3.97.

CURRICULUM

Pal, Rakhee and Chopra Mannika. Whose choice is it anyway ? **The Telegraph** 3.3.97.

Paul, Seema. *Mastering chores.* ***The Telegraph*** *10.3.97.*

Rajendran, N. Does it pay to study history ? **The Hindu** 18.3.97.

LANGUAGE & LANGUAGE POLICY

Atma Ram. Students' English: Fresh look at curriculum needed. **The Statesman** 12.3.97.

IN PURSUIT of nothing (Editorial). **The Statesman** 5.3.97.

Mahanta, Khagan Chandra. Assamese as medium of instruction. **The Assam Tribune** 1.3.97.

SCIENCE EDUCATION

Gupta, Y P. Science sans accountability. **The Tribune** 6.3.97.

________ Urgent need for a new science policy. **The pioneer** 18.3.97.

Lalitha, S. Upgrading school labs for nuclear science. **The Hindu** 13.3.97.

Rahim, Rizwana. Indian scientists need a better deal. **Deccan Chronicle** 16.3.97.

Rizwan Salim. For a grand S & T strategy. **The Hindu** 13.3.97.

VOCATIONAL EDUCATION

Anand, Navneet. 'The road ahead for India is a bright one'. **Indian Express** 11.3.97.

Banerjee, Sudershna. Set your rights on the JEE. **The Pioneer** 2.3.97.

Chokkalingam, R V M. Engineering as a liberal arts degree. **Deccan Herald** 9.3.97.

Gupta, Vibha. Managing rural India. **The Times of India**

12.3.97.

Mitra, Saheli and Chaudhuri, Chinmay. Travel and tourism: Around the world. **The Telegraph** 17.3.97.

Mukherjee, Sutapa and Banerjee, Sudeshna. Doctoring your future. **The Pioneer** 17.3.97.

Nanda, Antara. Five star opportunities in hotels. **The Times of India** 5.3.97.

Srinivasan, Haripriya. Setting sail in rough waters. **Indian Express.** 17.3.97.

Thyagarajan, Parthip. Well begun is half-done. **The Times of India** 5.3.97.

DISTANCE EDUCATION

Malik, Meera. Serving students at their doorstep. **The Tribune** 10.3.97.

Ramachandran, K. Bridging distances. **The Hindu** 3.3.97.

TEACHERS & TEACHING

Albert, Tanya. Once shunted, 'teaching is hot' in USA now. **The Times of India** 3.3.97.

Appasamy, Aruna. Teaching.....and much more. **The Hindu** 11.3.97.

Chakravarty, Manas. The teacher-taught affinity. **The Assam Tribune** 19.3.97.

Iyear, T G L. The teacher holds the magic wand. **The Hindu** 18.3.97.

Kakkar, S B. Teacher education on the rocks. **The Tribune** 17.3.97

Krishnaswamy, M. Dedicated teaching: Need of the hour **Deccan Herald** 9.3.97.

Prasad, Uma. The indispensable chalk. **The Hindu** 11.3.97.

COUNSELLING & GUIDANCE

Sen, Amreeta. Talking it over. **The Statesman** 8.3.97.

EDUCATIONAL RESEARCH

Das, Arvind N. Licensed to kill. **The Telegraph** 7.3.97

EDUCATIONAL TECHNOLOGY

Chakradeo, Anil and Jayan, T V. Gate(s) way to the pacific **Deccan Herald** 10.3.97.

Chandran, Manoj. Moving towards an informed India. **The Times of India** 10.3.97.

Malhotra, Jagdish R. "I'll say it again: Go to college". **The Hindustan Times** 5.3.97.

VISION REGULATION are needed for information highway. **The Times of India** 12.3.97.

EDUCATIONAL EVALUATION

Bhatnagar, Gaurav Vivek. Testing times ahead on the campus. **The Hindu** 24.3.97.

Bose, Kiran Jyoti. Are exams too testing ? : There's more to education than a marksheet. **The Times of India** 2.3.97.

Chandramauli, Rajani. The road to success. **The Hindu** 15.3.97.

Chona, Shyama. Are exams too testing?: Exam refine academic ability, build confidence. **The Times of India** 2.3.97.

Das, Shomie. Classroom consciousness. **The Telegraph** 9.3.97.

Jagtap, Namrutha. Exams: Routine annual events ?. **Deccan Herald** 8.3.97.

Joshua, Anita. Danger: Exams ahead. **The Hindu** 3.3.97.

Malhotra, Preeti. Marketing time. **The Hindustan Times** 5.3.97.

Roy, Ash Narain. Correcting a suicidal course. **The Hindustan Times** 20.3.97.

Sahariah, Bhubaneswar. Examination system in Tezpur University. **The Assam Tribune** 2.3.97.

Sen, Ayanjit and Mukherjee, Amit. Burning the midnight oil **The Statesman** 21.3.97.

Shankar, Meenakshi. Tips to tackle exams **The Hindu** 15.3.97.

Shrivastava, Girish Tests you'd better not mock at. **The Pioneer** 19.3.97.

Srinivasa Kumar, J. Take them in your stride **The Hindu** 15.3.97.

Vashisht, Shashi. A twist in the tale. **The Hindustan Times** 23.3.97

ECONOMICS OF EDUCATION

Ayaz Ashraf and Bopanna, P T The great exodus from ISRO **The Pioneer** 23.3.97

FREE MARKET in education (Editorial) **The Tribune** 19.3.97

Gates, Bill. Invest in education **The Times of India** 5.3.97

ISRO'S BRAIN drain (Editorial) **The Hindustan Times** 18.3.97.

POOR UNIVERSITIES (Editorial). **The Hindustan Times** 18.3.97.

Ramachandran, R. R&D sops : Where the rub lies. **The Economic Times** 10.3.97.

Ramachandran, R and Chanderashekar, S. S&T allocation . Beyond hike and hype. **The Economic Times** 3.3.97.

LIBRARIES & BOOKS

Babu, Hemant. Of bricks, books and bytes. **Indian Express** 3.3.97.

Bhatnagar. Upendra. Rare manuscripts 'in danger'. **The Tribune** 9.3.97.

Bhattacharyya, Sourish. The gatekeeper. **Indian Express** 16.3.97.

Chopra, Ashok. Signing off! **The Hindustan Times** 23.3.97.

Dandapani, S. Want a book to read or to read a book? **Deccan Herald** 3.3.97.

Gupta D S. A treat of rare books. **The Tribune** 23.3.97.

Tanseem, N S. A treasure trove of rare books. **The Tribune** 3.3.97.

STUDENTS & STUDENT ACTIVITIES

Basu, Anasuya and Sen. Atreyee. yes, you can-teen! **The Telegraph** 1.3.97.

Shukla, Saurabh. Kunjis are forever. **Indian Express** 9.3.97.

_______ . JNU's sultry nights. **Indian Express** 16.3.97.

SPECIAL EDUCATION

Aiyar, Shahnaz Anklesaria. 'Enabling' education is a right of the disabled. **The Times of India** 6.3.97.

George, Anita. United, we learn. **The Telegraph** 15.3.97.

WOMEN'S STUDIES

Dhanoa, H S. Education vital for women's empowerment. **The Tribune** 10.3.97.

SCHOOLS FOR girls (Editorial). **The Hindustan Times** 3.3.97.

ADULT EDUCATION

Ahuja, D R. Gloomy Pak literacy scene. **The Tribune** 5.3.97.

Lotus, W. Literacy target an impossible objective. **The Assam Tribune** 11.3.97.

ELEMENTARY & SECONDARY EDUCATION

Agnihotri, Peeyush. Taking people for a ride. **The Tribune** 10.3.97.

Chatterjee, Shekhar. Primary school-I: Gap between promise and fulfilment. **The Statesman** 3.3.97.

_______________ . *Primary schools-II: Systematic siphoning of funds.* **The Statesman** 4.3.97.

Mony, Aiyavoo T. Decline of learning levels in primary schools. **The Hindu** 4.3.97.

Pillai, J K. Mothers, take it easy. **The Hindu** 4.3.97.

Swaminathan, Mina. Getting it right. **The Hindu** 9.3.97.

INTERNATIONAL COOPERATION

Raha, Shuma. Educating Indians. **The Telegraph** 2.3.97.

INSTITUTIONAL PROFILE

Bhatnagar, Gaurav Vivek. A jubilee year for Jubilee Hall (*University of Delhi*). **The Hindu** 3.3.97.

Ganguly, J. Seventy five years of fruitful service to biochemistry: Department of Biochemistry, Indian Institute of Science. **The Hindu** 4.3.97.

Jones, Adam. *Oxford College means business.* **The Statesman** 18.3.97.

Sadhu, J N. Raising a storm: Indian Institute of Advanced Study, Shimla. **Deccan Herald** 9.3.97.

BIOGRAPHICAL PROFILE

Bond, Ruskin. Prep school days in Shimla. **The Statesman** 23.3.97.

Sekhon, Surinder Singh. Randhawa : An institution par excellence. **The Tribune** 8.3.97.

Jamia Hamdard

(HAMDARD UNIVERSITY)

HAMDARD NAGAR, NEW DELHI-110062

ADMISSION NOTICE FOR THE SESSION 1997-98

Applications for admission to the courses mentioned below are invited from the eligible candidates on the prescribed admission form. Admissions will be done on the basis of Entrance Tests, except M. Pharm. course.

MASTER'S COURSES

1) M.Sc. in (a) Biochemistry, (b) Environmental Botany & (c) Toxicology
2) M.D. (Unani) in (a) Mualijat & (b) Ilmul Advia.
3) M Pharm. in (a) Pharmaceutical Chemistry, (b) Pharmaceutics, (c) Pharmacology & (d) Pharmacognosy and Phytochemistry.

Bachelor/Diploma Courses (Eligibility 10+2 with Physics, Chemistry & Biology; 55% in aggregate for courses 1-4. 10+2 in any subjects for course 5)

(1) **B. Pharm.** (2) **B.Sc. Nursing,** (3) **B.U.M.S.** (4) **D. Pharm.** (5) **Diploma in Nursing & Midwifery.**

PRE-TIBB

Fazil from Deoband, Alimyat from Nadwa or Alim (Arabic) or Farighul Tehsil from a Dars-e-Nizami Madrasah recognised by Jamia Hamdard.

Bulletin of Information and Admission Form may be obtained from the Registrar by sending self-addressed envelope (10"x12") alongwith crossed Bank Draft/IPO for Rs. 150/- drawn in favour of **Jamia Hamdard, Hamdard Nagar, New Delhi** payable at New Delhi. The last date for the submission of completed admission forms is **May 31,1997 (4 p.m.).**

The **Bulletin of Information** and Admission Form may also be obtained on cash payment of Rs. 150/- from the centres mentioned below from **May 1, 1997:**

(1) **The Reception Counter of Jamia Hamdard on any working day** (2) **Maktaba Jamia Limited** Urdu Bazar, Jama Masjid, Delhi (3) **Business and Employment Bureau,** Hamdard Building, Asaf Ali Road, New Delhi (4) **Friends Book House,** Shamshad Market, A.M.U., Aligarh (5) **Jamia Education Bureau,** 2B, Gaffar Manzil, Jamia Nagar, Okhla, New Delhi (6) **Branch Office : Hamdard (wakf) Labs.** Ashok Raj Path, Opp. B.N. College, Bankipur, Patna.

DR. Q.G. ALI
Registrar

HIMACHAL PRADESH UNIVERSITY

ADMISSION TO MBBS/BDS & BAMS COURSES IN HIMACHAL PRADESH

EXAMINATION NOTICE

An objective (MCQ) type entrance examination for admission to the MBBS/BDS and BAMS courses in Indira Gandhi Medical College, Shimla/Dr. Rajinder Prasad Govt Medical College, Kangra (Tanda)/Govt. Dental College, Shimla/Rajiv Gandhi Govt. Ayurvedic College, Paprola (Kangra) and Govt. free seats as well as payment seats in private dental colleges in Himachal Pradesh for the session 1997-98 will be held on 29th June, 1997 at Shimla, Mandi and Dharmsala. Examination is open to the children of bonafide residents of Himachal Pradesh/Employees of Himachal Pradesh Govt. and autonomous bodies wholly or partially financed by the Himachal Pradesh Govt. who have passed atleast two examinations i.e. Middle, Matric, 10+2 or their equivalent from the recognised *schools/Colleges located in Himachal Pradesh/affiliated to ISCE/CBSE/H.P. Board of School Education.*

The bonafide Himachali students who are admitted to Navodaya Schools situated in Himachal Pradesh and who pass Matric or 10+2 examinations under the exchange programme from other Navodaya Schools in the country shall also be eligible for appearing in the entrance examinations

The wards of Defence Personnel/ serving Central Govt. employees who are bonafide Himachalis are also exempted from the condition of passing two examinations from the State of Himachal Pradesh.

NRI's/NRI sponsored/Foreign Nationals are also eligible to apply for admission in Govt. Medical & Dental Colleges for which they will not be required to take the Entrance Test.

For details regarding scope of examination, eligibility etc. the prospectus be consulted which will be available from the third week of April from the University on payment of Rs. 90/- at the counter or Rs. 110/- by post by sending Indian Postal Orders payable in favour of the Finance Officer, H.P. University, Shimla-5 or $10 (for NRI categories). (MONEY ORDERS WILL NOT BE ACCEPTED) All enquiries relating to admission to MBBS/BDS/BAMS courses should be made from the Assistant Registrar (Entrance Test) of the University or the concerned College Principals

Application(s) complete in all respects alongwith the fee as prescribed in the Prospectus to be remitted through crossed Indian Postal Order/Bank Draft payable in favour of the Finance Officer, Himachal Pradesh University, Shimla-5 must reach the office of the Assistant Registrar (Entrance Tests) Himachal Pradesh University, Shimla-171005 **upto 9.6.1997** alongwith three self addressed envelopes whereafter no application shall be accepted. In case any candidate does not receive Roll Number by post then he/she may collect duplicate Roll Number at the University Counter on 26th, 27th and 28th June, 1997 between 11-00 AM to 4-00 PM

A.R. Chauhan
Controller of Examinations

THE BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY, LUCKNOW

(CENTRAL UNIVERSITY)

ADMISSION NOTICE - 1997-98

Applications are invited for admission to the following full time programmes from eligible candidates for appearing in admission test to be conducted on June 15, 1997 at Bangalore, Bhopal, Calcutta, Delhi, Guwahati, Hyderabad, Lucknow, Mumbai, Vadodara (the University reserves the right to change the examination centre without assigning any reasons)

1. **School for Information Science & Technology**	M Sc (Information Sc.)	Two year Duration Graduates of all faculties are eligible
2. **School for Environmental Science**	M Sc (Environmental Sc.)	Two year Duration B.Sc. (Bio/Life Sc.) are eligible
3. **Centre for Rural Technology**	Post Graduate Diploma (i) Horticulture (Seed and Nursery Production)	One year Duration B.Sc. (Bio/Life Sc.) are eligible
	(ii) Sericulture	B.Sc. (Bio) are eligible
4. **Centre for Vocational Studies**	Post Graduate Diploma Computer Software Applications	One year Duration Graduates of all faculties with Sc & Maths at 10+2 level are eligible
5. **Centre for Human Rights**	Post Graduate Diploma	One year Duration Graduates in Law are eligible

Seats & Reservation

1. 20 Seats available in each programme.
2. 50% seats reserved for SC/ST candidates

The booklet containing application form for admission test can be obtained from the Officer on Special Duty, the Babasaheb Bhimrao Ambedkar University, Rae Bareli Road, Lucknow-226 014 on payment of Rs. 200/- (Rupees two hundred only) (Rs. 50/- for SC/ST candidates), at the counter or by remitting crossed Demand Draft of like amount payable at Lucknow drawn in favour of Finance Officer, The Babasaheb Bhimrao Ambedkar University, Lucknow alongwith a self addressed stamped envelope for Rs. 15/- (Rupees fifteen only) of size not less than 9"x12". The payment in any other form will not be accepted. Last date for the receipt of application form complete in all respects is May 10, 1997. Application will be received till May 17, 1997 with late fee of Rs. 50/-. A candidate can apply for more than one programmes by filling up separate application form for each programme.

Note

1. Candidates due to appear in 1997 at the final year examination of the graduate degree prescribed for admission may also appear in the admission test but their admission would be subject to their fulfilling the eligibility criteria (as mentioned in the booklet) by December 1997.
2. During 1997-98 students will have to make own arrangements for boarding and lodging.
3. While the University shall ensure timely despatch of application form soon after receipt of the request from intending candidates, it will not be responsible for postal delays.
4. Incomplete applications and those received on photocopies of the form will not be considered.

UNIVERSITY OF ROORKEE

ADMISSION TO POSTGRADUATE PROGRAMMES 1997-98

1. Master's Degree Programmes (M.E./M.Tech./M.Arch./M.U.R.P.) of 1½ years (3 Semesters) Duration

(a) **Department of Architecture and Planning**

* Architecture * Urban and Rural Planning * Building Science and Technology (Offered by C.E. Department)

(b) **Department of Chemical Engg.**

* Advance Transfer Processes * Computer Aided Process Plant Design * Industrial Pollution Abatement

(c) **Department of Civil Engg.**

* Building Science and Technology * Computer Aided Design * Environmental Engg * Geotechnical Engg. * Hydraulic Engg. *Remote Sensing & Photogrammetric Engg * Structural Engg. * Transportation Engg

(d) **Department of Earthquake Engg.**

* Soil Dynamics * Structural Dynamics

(e) **Department of Electrical Engg**

* Measurement and Instrumentation *Power Apparatus and Electric Drives * Power System Engg * System Engg and Operations Research

(f) **Department of Electronics & Computer Engg.**

* Communication System * Control and Guidance *Microwave and Radar *Solid State Electronics

• Computer Science and Technology * TV Technology (extension programme of P G Diploma)

(g) **Department of Mechanical & Industrial Engg**

* Machine Design Engg * Production and Industrial System Engg. * Thermal Engg * Welding Engg

(h) **Department of Metallurgical & Materials Engg.**

* Extractive Metallurgy * Industrial Metallurgy

* Physical Metallurgy

(i) **Institute of Paper Technology, Saharanpur Campus**

* Pulp & Paper

ELIGIBILITY FOR ADMISSION

* Bachelor's degree in the appropriate field of Engineering/Technology/Architecture. Alternate Qualifications exist Details are available in Information Brochure

• M.Sc in Electronics, Computer Science Physics, Mathematics or Statistics with background in Electronics and Computers

2. Postgraduate Diploma Programme of 1 Year (2 Semesters) Duration

(a) **Department of Earthquake Engg.**

* Earthquake Engg * Earthquake Technology (only for sponsored candidates)

(b) **Department of Humanities and Social Science**

◆ Industrial Management

ELIGIBILITY FOR ADMISSION

* Bachelor Degree in Civil/Mechanical Engg. for Earthquake Engg. and M.Sc./M.Tech. in Physics/Mathematics/Geophysics/Geology with Physics & Mathematics at B.Sc. level for Earthquake Techology.

◆ Bachelor's degree in Engineering or Master's degree in Science in appropriate disciplines

Alternate Master's degree in Economics/Psychology/commerce with Mathematics at 10+2 level.

3. M.Phil. Programmes of 1 Year (2 Semesters) Duration

(a) **Department of Chemistry**

* Industrial Methods of Chemical Analysis

(b) **Department of Mathematics**

* Computer Applications * Mathematics

(c) **Department of Physics**

* Instrumentation * Material Science

ELIGIBILITY FOR ADMISSION

* Master's degree in Science in appropriate disciplines or B.E. degree. Diploma in Process Instrumentation (IPT) for M.Phil. Instrumentation only.

4. M.Tech. Programmes of 3 Years (6 Semesters) Duration

Department of Earth Science

Applied Geology * Applied Geophysics

ELIGIBILITY FOR ADMISSION

* Bachelor's degree in Science in appropriate discipline

5. M.Sc. Programmes of 2 Years (4 Semesters) Duration

* Applied Geology * Applied Mathematics

* Biotechnology * Chemistry *Physics

ELIGIBILITY FOR ADMISSION

*Bachelor's degree (Three years course) in Science in appropriate discipline

6. University Diploma of 2 Years (4 Semesters) Duration at Institute of Paper Technology, Saharanpur Campus

* Pulp and Paper *Process Instrumentation

ELIGIBILITY FOR ADMISSION

* Bachelor's Degree (Three Years Course) in Science with Physics, Chemistry and Mathematics.

Information Brochure containing Application form can be obtained from the Office of Chairman, P.G. Admissions 1997-98 (Academic Section) University of Roorkee, Roorkee-247 667. Application Form of M.E./M.Tech. (C.S.T.)/M.U.R.P./M.Arch./P.G. Diploma in Earthquake/ M.Phil./M.Tech. (Earthscience)/M.Sc./University Diploma (Pulp & Paper/Process Instrumentation)/P.G. Diploma (Industrial management) is available on a payment of Rs. 125/- (One hundred & Twenty Five only) for General and O.B.C. candidates, Rs. 40/- (Rs. Forty only) for S.C., S.T. categories candidates each either by University receipt or Bank Draft in favour of the Registrar, University of Roorkee payable at State Bank of India, University Branch, Roorkee (Code No. 1069), in person or by sending a self-addressed 22x30 cms envelope with postage stamps of Rs. 5.00 affixed on it. Candidates who have appeared in the final examination of qualifying degree are also eligible to apply for admission. They will be considered provisionally for admission provided they submit a certificate of having completed all examination requirements of the final qualifying examination. Provision exists for reservation of seats to the extent of 21% for SC, 2% for ST and 27% for OBC (U.P. State only) of the sanctioned intake of course(s). The Application Form will be available w.e.f. 15.4.97 to 26.5.97 by post and 15.4.97 to 30.5.97 in person.

Last date for receipt of complete Application Form in the office of chairman, P.G. Admissions 1997-98 (Academic Section) is 31.5.1997

NOTE:
1. **CANDIDATES MUST MENTION CLEARLY THE NAME OF DEPARTMENT WITH COURSE SPECIALIZATION FOR WHICH THEY DESIRE TO GET THE APPLICATION FORM.**
2. **SEPARATE APPLICATION FORM SHOULD BE FILLED FOR COURSES BELONGING TO DIFFERENT DEPARTMENTS.**

ROORKEE

G.G. CHHABRA
Registrar

CLASSIFIED ADVERTISEMENTS

TILAK MAHARASHTRA VIDYAPEETH

(DEEMED UNIVERSITY)
VIDYAPEETH BHAVAN, GULTEKADI
PUNE 411 037

Applications are invited in the prescribed form for the following posts, so as to reach the undersigned on or before 5th May 1997.

Sr. No.	Name of the post	No. of posts	Reservations
1.	Reader in Sanskrit	1	Open
2.	Reader in Economics	1	Open
3.	Lecturer in Economics	1	S.C.
4.	Lecturer in Sociology	1	S.C.

Qualifications and pay scales for the above posts are as per the norms laid down by the University Grants Commission, the details of which are available alongwith the application form in the Vidyapeeth on payment of Rs. 30/- by cash or Rs. 40/- by D.D./I.P.O. in favour of the "Registrar, Tilak Maharashtra Vidyapeeth, Gultekadi, Pune 411 037".

Advt. No. 1/97-98 **R.K. Dhavalikar**
Date : 4th April 1997 **REGISTRAR**

DEMPO CHARITIES TRUST'S

S. S. DEMPO COLLEGE OF COMMERCE & ECONOMICS

ALTINHO-PANAJI - GOA

Invites applications for the following posts :

1) Lecturer in Commerce .. 1 Post full-time
2) Lecturer in Accountancy .. 2 Posts full-time
3) Lecturer in Commerce .. 2 Posts full-time
4) Lecturer in Accountancy .. 1 Post full-time
5) Lecturer in Business & Industrial Law .. 1 Post lecture basis

I. The post listed under serial No. 1, is reserved for the candidates belonging to O.B.C. and is advertised for the fourth time. The posts listed under serial nos. 2 and 3 are reserved for the candidates belonging to scheduled caste and are being advertised for the first time. The posts under serial Nos. 4 and 5 are reserved for the candidates belonging to scheduled tribes and are advertised for the first time. For the post under serial No.1 candidates from the respective category only should apply. For posts under serial Nos. 2,3,4 and 5 if no suitable candidates are available from reserved categories, candidates from general categories will be considered for appointment, temporarily for one academic year.

II. **Academic Qualificaitons :**

1) Master's degree in the relevant subject (i.e. minimum 6 papers) with atleast 55% marks or its equivalent grade and (2) good academic record. For posts under serial No.2 and 4 candidates with B.Com. + C.A. with five years professional experience and good academic record considered as an alternative qualification to the one mentioned above may also apply.

III. Candidates for all the above posts should have cleared the eligibility test for lecturers conducted by U.G.C., C.S.I.R. or similar test accredited by U.G.C. In case candidates having passed the said eligibility test are not available, candidates fulfilling other conditions would be considered for appointment on purely temporary basis.

IV. Scale of Pay : Rs. 2200-75-2800-100-4000 plus admissible allowances.

V. **Service conditions** : As prescribed by Goa University, Directorate of Higher Education, Govt. of Goa, and other competent authorities. Persons who are employed shall send their applications through proper channel. Break in service, if any, should be accounted for. Interested candidates should apply giving full details of academic qualification from S.S C. onwards clearly indicating the subjects offered, marks scored and class/division and percentage obtained at all public examinations, teaching experience, address, date of birth etc. Certified true copies of mark statements of all public examinations passed should be enclosed.

Applications duly completed in all respects should reach the Principal within 15 days from the date of publication of this advertisement, clearly mentioning the serial number of the post applied for

S.L. Sardesai
PRINCIPAL

AGRICULTURAL SCIENTISTS RECRUITMENT BOARD

KRISHI ANUSANDHAN BHAVAN
PUSA, NEW DELHI - 110 012

CORRIGENDUM

1. In A.S.R.B. Advertisement No. 3/96 bearing D.A.V.P. No. 1020/13/96 published in *University News* on 23rd December 1996 in Essential Qualification No. (i) relating to the post at Sl. No. 48, the following may be added:-

"Extension and Statistics"

Other contents of the advertisements remain unchanged. The last date for receipt of application in ASRB in respect of the post of Head, Extension Information and Statistics Division, Central Institute of Fisheries Technology, Cochin has been extended upto 5.5.97. Those who have already applied need not apply again.

—davp 1020 (2)97

CENTRAL INSTITUTE OF FISHERIES EDUCATION

(DEEMED UNIVERSITY)

(I.C.A.R.)

VERSOVA, MUMBAI-400 061

ADMISSION NOTICE 1997-1998

All India Competitive Examination for Admission to Ph.D. Programme for the academic session 1997-98 commencing from 01.09.1997 will be held on 6th July at Mumbai.

S. No.	Name of Discipline	No. of seats
1.	Fisheries Resources Management/ Inland Aquaculture	10
2	Mericulture	10

Total - 20

(Out of which 3 seats are reserved for SC & 1 for ST)

Eligibility Qualifications :

M.Sc (FM)/IFAM/Aquaculture/Mericulture/Industrial fisheries/Marine Biology/Coastal Aquaculture or M.F.Sc (Fisheries Resources Management/Inland Aqualcuture/Mericulture) or D.F.Sc provided the candidates hold a Bachelor Degree in Biological Science and have two years of experience or M.Phil in Zoology/Biology with specialisation in any branch of Fisheries Science.

Candidates for all the disciplines must possess 60% marks or with OGPA or 7.5/10 or equivalent or first class in case of 5.4 and 3 point scale (For SC/ST candidates 55% marks or with OGPA of 7.0/10 or equivalent grade for 5.5 and 3 point scale).

Minimum residential requirement for Ph.D. Programme is 3 years (6 semesters) with one year course work in the first year (2 semesters) Besieds the regular semester programmes candidates who have not been exposed to Fisheries subjects in their Master degree programme shall have to take prescribed remedial course on fisheries as per the advise of the Advisory Committee.

Age Limit

The minimum age limit for admission shall be 22 years as on 31.08.1997. No relaxation in age limit is allowed

There is a provision for Awarding Institutional fellowship to selected candidates @ Rs. 1800/- for the 1st & 2nd year, @ Rs 2200/- for the 3rd year.

Prescribed Application Form alongwith Information Bulletin for the Entrance Examination and Admission for the Ph.D. Programme can be obtained from the Sr.A.O./REGISTRAR, CIFE, MUMBAI-61. Request for Information Bulletin and Application Form to be sent by post may be made upto 24.05.1997. But Application Form and Information Bulletin may be obtained in person at the CIFE till 31.05.1997. When given in person at the CIFE, the charge for the same will be Rs. 35/- in the shape of crossed Demand Draft but if it is to be sent by post a crossed Demand Draft of Rs. 50/- will be required, to be drawn in favour of **"ICAR UNIT/CIFE, MUMBAI, STATE BANK OF INDIA, VERSOVA BRANCH, MUMBAI-400 061".** Request for this through cheque/postal order/VPP will not be entertained. The Admit Card for the Entrance Examination to the eligible candidates will be sent by post. Any postal delay in the Admit Card reaching the candidates will not be the responsibility of the CIFE. The last date of receipt of filled in Application Form is **31.05.1997**

UNIVERSITY NEWS, 35(16), APRIL 21, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL–11106/97

Estd. : 1981 Gram : ADMSTUDIES PHONE : 0621-248919 FAX : 0621-244309

INSTITUTE OF ADMINISTRATIVE STUDIES

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Two Year Full Time PGDM Programme (MBA-Course)

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At our **GHAZIABAD - EXTENSION CENTRE** in the Campus of

SAVVY INSTITUTE OF MANAGEMENT STUDIES

R-10 / 129, RAJNAGAR (PHONE 754 890), GHAZIABAD - 201 001 (U.P.).

Apply Latest by 30th May' 97 on prescribed form available for Rs. 400/- only from the Institute; and obtain further details from the *Director, SAVVY Institute*.

Candidates who could not apply for MERIT SEATS through MAT (till 15th April' 97) may now apply for payment seats to get interviewed on 15th June' 97 (10 AM) at

R. R. Sahu Centre for Business Administration

Chakkar Maidan Campus, (Behind SBI-Staff Training Centre, Muzaffarpur (Bihar).

Application Forms for Muzaffarpur Centre available by sending Bank Draft of Rs. 400/- only favouring Institute of Administrative Studies, Payable at Muzaffarpur.

– Chairman
Dr. T. N. Chaudhary

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Tentative ACADEMIC CALENDAR (P.G.D.M.) : 1997-99

Events	Sem. I	Sem. II	Sem. III	Sem. IV
1. Classes Start	15.07.97	15.01.98	30.07.98	15.01.99
2. Classes End	30.11.97	30.04.98	30.11.98	31.04.99
3. Last Date For Exam. Fees and Forms	15.11.97	15.04.98	17.11.98	14.04.99
4. Exams Programme	Dec 15, 19, 23, 27, 31	May 15, 19, 23, 27, 31	Dec 17, 21, 25, 29 & Jan 4	May 15, 19, 23 (Viva on May 25)
5. Results Expected on	28.02.98	30.07.98	28.02.99	30.06.99

Admissions Closing : 1st List on June 23, 1997 : : Remaining : July 10, 1997

[illegible] AIMA-CME (New Delhi) & AIMA- [illegible]

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University News

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P. DHANAVEL

Teaching Creatively for Productive Education

S.K. SHARMA

Globalisation of Indian Business Education

— To be or Not to be, That's the Question

D.RAJAGOPALAN & S. ARAVANAN

Administration of University Departments and Colleges

C.V. SUBBA RAO

Academic Research & Practical Librarianship

— Need for Urgent Reform

YOGINDER K. ALAGH

Atoms for Peace

— Convocation Address

Association of Indian Universities

MINISTRY OF HUMAN RESOURCE DEVELOPMENT (DEPARTMENT OF EDUCATION)

FRENCH GOVERNMENT SCHOLARSHIP - 1997-98

Applications in duplicate are invited in the prescribed format given below *from Indian nationals for the award of two* (2) French Government Scholarships for the year 1997-98 in Political Science & Economic (preference will be given to projects in Agriculture *and Environment Economics*) for *Doctoral/Post-Doctoral* Research

DURATION : 12 months

VALUE : (1) a stipend of 5650 French francs per month to cover the stay and living expenses (2) medical reimbursement will be made in accordance with existing French Government Scholarship regulations

TRAVELLING EXPENSES : Air passage by economy class *from Bombay/Delhi to Paris and back will be provided by the* French Government

ACADEMIC QUALIFICATIONS REQUIRED : The candidates must possess Master Degree/Ph D for doctoral/Post-Doctoral Research respectively with 60% or above marks

FRENCH LANGUAGE: candidates having a good knowledge of French Language will be given preference

PLACEMENT : Applicants must have a letter of acceptance from *a French University/research institute or centre at the time of* interview

CONDITION : In case the applicant is unable or unwilling to complete the period of scholarship he/she will be obliged to refund the grant of donor country in addition to the Bond Money etc

NOTE : The following documents must be attached with the application (a) *attested copy of the certificate certifying the date* of birth (b) attested copies of all degrees/diploma/certificates etc (c) Candidates must furnish a clear and precise programme of *study/research* (d) *A recent passport size photograph of the* candidate must be affixed on the prescribed application form

2 Application in the subject field other than those specified above will not be considered

3 Candidates who have already been abroad for study research specialisation/training either on a scholarship or on their own for more than six months may apply if they have been in India for at least two consecutive years after their return from abroad

4 *Applications of candidates who are at present abroad will not* be considered

5 Candidates should have sufficient knowledge of India and the donor country

6 Incomplete application will not be considered

7 No correspondence will be made with candidates not selected for interview/scholarship

8 Canvassing in any form will be a disqualification

9 Candidates who are in employment must send their applications duly sponsored by their employers

10 *No application will be entertained after* the last date of receipt of applications i e **20th May, 1997.**

11 Applicants can obtain addresses of French Institutions by writing to the Director, Centre for Human Sciences, French Embassy, 2. *Aurangzeb Road, New Delhi* - 110001

12 No application forms are supplied by this Ministry

13 Decision of the Selection Committee with regard to selection or otherwise will be final

Candidates should send their applications in duplicate to the *Secretary, Department of Education, Ministry of Human Re*sources Development, A 1/W 3 Curzon Road Barracks, Kasturba Gandhi Marg, New Delhi-110001 The last date of *receipt of application is* ***20th May, 1997***

PROFORMA FOR APPLICATION

1 Name of the Scholarship Scheme

2 (a) Subject
(b) Course Opted

3 Name of the Candidate
(in block letters) with full mailing address

4 Date of Birth and the State to which the candidate belongs

5 Whether member of SC/ST
(A certificate from the competent authority should be attached)

Recent passport size photograph duly signed to be pasted here Without photograph application will be considered incomplete

6 Academic record starting from High School/Higher Secondary (Attested/Photostat copies of certificates to be attached)

Name of the university Board Institute	Examination(s)	Year of passing	Division class with position if any (in case no class is awarded and only grading is done the conversion formula may be mentioned)	Percentage of marks obtained and position if any	Subjects taken
1	2	3	4		

7 Details of professional practical training and research experience specifying the period and number of papers published previous employment

8 Nature of the present employment with name and date of appointment/designation and the name and address of the employer

9 Have you been abroad? if so give full particulars of the country visited and the period of stay Also mention the date month and year of return to India (purpose of visit also to be indicated)

10 Proposed programme of study research and Training specifying the following

(i) The work at present engaged in

(ii) Nature and Programme of Study research/training desired (500 words) (a) Title of Study/Research (b) Hypothesis/Objective of study (c) Methodology (to be adopted) (d) Institutions where such studies are being done (e) Relevance of *study in Indian academic context*

DECLARATION : *I certify that the foregoing information is* correc and complete to the best of my knowledge and nothing has bee concealed/distorted I understand that if at any time I am found t have concealed/distorted any materials information my selectio shall be liable to *summary* termination without notice and compensation

UNDERTAKING : I undertake to refund the grant (expenses i curred by the donor country) in addition to the bond violation mone in case I am unable or unwilling to complete the period of schola ship in France

Place
Date

Signature of the Applica

davp 97/38

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Editor :
SUTINDER SINGH

Teaching Creatively for Productive Education

P. Dhanavel*

Mental slums are more dangerous to mankind than material slums.
(Radhakrishnan 1989: 141-142).

Never before in the history of Indian education was there such a *crisis as the disquieting present one : more quantity and less quality,* more mechanism and less organism, a body without soul. The educational system at all stages seems to have become an incurably morbid monster that devours more and more of economy but hardly shows any sign of recovery, not to speak of redemption. Several serious minded educationists have identified various causes and discussed them thoroughly with a view to help the system out. But ultimately, the vision seems to be bleak because of the self-defeating characteristic of Indian education (*Ansari* 1987; *Chauhan* 1990a; *Khan* 1991; *Kumar* 1992; *Nair* 1986; Singh 1985; *Singh and Sharma* 1988; *Srivastava* 1988-89; *Verma* 1990; among others).

In this context it is suggested that the teacher, "the most important component of educational process" (*Chauhan* 1990a: vii), can rise to the occasion and answer many of the educational questions right from financing higher education to improving quality, if he begins to consciously exercise his own creative potential in his teaching and thus in the process teaching creativity to his students. This creativity of the teacher and the students can enormously contribute to the development of Indian education and economy.

Education

To began with a functional definition of education: Basically, from an anthropological and futurological viewpoint, education is meant for increasing man's capacity for survival on earth. This means he has to channelize his physical as well as mental energy towards the common goal of universal welfare. From a developmental and ethical *angle, each nation has to aim at overall development through the* educational system. In fact, free India visualized development through education. This attempt has rapidly effected an impressive growth in quantitative terms. But unfortunately, the higher education system has not been able to maintain a minimum level of educational standards. Even the Freedom Movement ethos seems to be missing these days. This is a major reason for the considerable amount of disintegration in all walks of life. Consequently, the most venerable temples of learning have become industrial units for producing "unworthy" and "unemployable" young men and women.

The problem of unproductive education leads to the question of productive education. In the organizational sense, productivity is a "performance measure including effectiveness and efficiency" (*Robbins* 1988:534). "An organization is productive if it achieves its goals and does so by transferring inputs into outputs at the lowest cost. As such productivity implies a concern for both *effectiveness* and *efficiency*"

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*Lecturer, Deptt of English, Tripura University, Agartala-799 004 (*ibidem*: 28) If the educational system is examined and evaluated as an organization, the cost effectiveness of the system appears to be dismal. Neither is it effective nor is it efficient, for there is always a wide gap between the expected outcome and the actual outcome. As a result, the system has almost become counter-productive — it has tended to become inimical to productive education.

Traditionally, teaching has been taken to mean that an individual in full possession of all knowledge in his head transmits the same to an uninitiated and uniformed learner group. The students thus would become initiated and informed after the teaching. Such educated people would be expected to perform a certain task in their life time. However, with the advance of information explosion, the role of the teacher has changed. Not only is he expected to transmit his limited knowledge but also is he required to cultivate the talent of responding to the fast changing environment effectively (*Chauhan* 1990b:4). Now the emphasis is on how to learn rather than what to learn (*Weinstein* 1996). The 21st century teacher needs to learn continuously and to cause continuous learning spirit in his students while teaching a specified subject. In order to meet this challenge, he has to use his creativity. When the teacher teaches creatively, the students also learn to become creative.

Creativity

An account of creativity is provided here for a better understanding of creative teaching: (i) to create from Latin "creare" means "to bring into being or form out of nothing : to bring into being by force of imagination: to make, produce or form: to design, to invest with a new form, office or character: to institute: to be the first to act (a part)" (*Chambers Dictionary* 1975:304); (ii) "creativity ... is basically the process of making, of bringing into being (*May* 1959:58); and (iii) creative capacities of the mind refer to "the ability to visualize, to foresee and to generate ideas" (*Osborn* 1963:1). All these definitions of creativity point to the fact that creativity is a mental ability which gives life to an idea or action or object or all of these at the same time. The thrust is on creating — *giving a new life.*

In addition to an understanding of the fundamental nature of creativity, some of the characteristics of a creative person are also given here, for the teacher has to realize them in him as well as in his students:

> ...desire to grow, capacity to be puzzled, awareness, spontaneity, spontaneous flexibility, adaptive flexibility, originality, divergent thinking, learning, openness to new experience, no boundaries, yielding, readiness to yield, abandoning, letting go, being born every day, discarding the irrelevant, ability to toy with elements, change of activity, persistence, hardwork, composition, decomposition, recomposition, differentiation, integration, being at peace with the world, harmony, honesty, humility, enthusiasm, integrity, inner maturity, self-actualizing, skepticism, boldness, faith, courage, willingness to be alone, *I see, I feel, I think*, gust for temporary chaos, security in uncertainty, tolerance of ambiguity (*Anderson* 1959:238).

The list is neither definitive nor exhaustive. In fact, so long as there is creativity, the list of characteristics is likely to be ever expanding. The present purpose is to draw the attention of the community of teachers and students to such characteristics as that may help them in teaching-learning creatively.

Creative Teaching

In order to make all this creative teaching for productive education more meaningful and useful, a practical discussion is presented on the way in which both the teachers and the students could approach the opening lines of William Wordsworth's *The Prelude*. The aim is to make the students of M.A. English Literature come to intimate terms with the opening lines and also to tap their creative potential as best as the discussion session can offer

A few preliminary assumptions and activities are described her for a successful creative teaching. It is presumed that the postgraduate students have already read poems like *The Solitary Reaper, I Wandered Lonely as a Cloud, To a Skylark, My Heart Leaps Up* and so on at their school stage and poems like *Tintern Abbey, Ode to Immortality* and so on at their college stage. It is assumed that they have a good knowledge of the biographical details of Wordsworth and of the Romantic Movement. Of particular importance is their understanding of Wordsworth's Preface to *Lyrical Ballads*". All these assumptions could be checked and also achieved in one or two warm-up sessions.

It is essential for the teacher to realize that he should desist from monotonous monologic discourse, that is only telling the students all that they have to learn by themselves. It is neither good for the physical health of the teacher nor good for the mental health of the students. Instead it would be better to invite and encourage the students to participate in the teaching learning process. Even the quietest and dullest of the students would then begin to think about the topic of discussion, if the teacher could ask a series of stimulating questions and initiate them to engage in discussion. This kind of interrogative interaction helps the students discover their own understanding of the topic and internalize their new knowledge meaningfully and systematically. Only then can they achieve the requirements of the postgraduate students: (i) to "feel intellectually more competent" and to "think more coherently and more deeply" and (ii) to "get a sensation of having [their] mind stretched and made more supple" (*Singh* 1985:175). If the teacher asks himself what he can do to achieve these two requirements of his students, he may move nearer to becoming a creative teacher.

The creative teaching of the Wordsworthian poem may be begun with some background information on the topic. *The Prelude* was written with an epic dimension over a period of seven years from 1799 to 1805. Before its posthumous publication in 1850, in underwent significant revisions several times. Interestingly, the title *The Prelude or, the Growth of Poet's Mind An Autobiographical Poem* was given by Mary Wordsworth, the poet's widow (*Darbyshire* 1962:75). Designed as an introduction to *The Recluse* and addressed to Samuel Taylor Coleridge, *The Prelude* deals with the central theme of "the benign influence exerted by nature on the growing faculties of the.whole man, as of things made to interact, and the emergence of the complemental beauty of nature (*Morgan* 1991:78). Further information of this kind may be given or better the students gather such relevant information for themselves.

A rhythmic reading of the opening lines:

Oh there is blessing in this gentle breeze
A visitant that while it fans my cheek
Doth seem half-conscious of the joy it brings
From the green fields, and from you azure sky.

An uncreative and unimaginative teacher may simply tell the students that these are the opening lines of Wordsworth's autobiographical epic in which the poet gets inspiration from the breeze instead of the classical Muse Calliope. If the teacher is interested in scholarly pursuits, he may gather some biographical details related to the passage and also collect some interesting information on the romantic metaphor of breeze. If he comes upon M.H. Abrams's invaluable article *The Correspondent Breeze: A Romantic Metaphor (Abrams* 1975: 35-54), he may relate the external natural breeze with the internal "unnatural" breath of Wordsworth and explain how "his heart's frost is said to be broken by both under and inner winds" (*Hartman* 1991:88). If the scholar-teacher happens to have comparative bent of mind, he may fully utilize the insight of Abrams and provide a comprehensive picture of Romanticism, though borrowed from another eminent scholar-critic. If his interests are wide, he may find further references in critics like Abercrombie (*Moorman* 1957:274), *Darbyshire* 1962:126, Margoliouth (1953:138), *Selincourt* (1959:246) and many more about the animating, corresponding, divine, gentle, inspirational, intellectual, jocund, soft, and vital breeze. Similarly, he may tell the students some vivid incidents recorded by Wordsworth from Book 1, 2 and so on and finally conclude that Wordsworth is one of the greatest nature poets of the world.

But where does all this lead to? Memorization, reproduction, invariably pass and sometimes fail, employment or unemployment, but the M.A. degree remains devoid of any significance. Is that all education meant for?

Most of the teachers, of course, would agree that education is not meant for paper degree production alone. They would also agree that teaching is much more than dictating dogmatic notes/essays which may be expected to be faithfully reproduced. In these circumstances the only solution to our present crisis in educational standards seems to be creative teaching. Creative teachers may demonstrate, in this case, the interaction among the objects of consciousness from zero to infinity, that is, from the inanimate non-being to the animate being, including the divine and the human. Instead of describing the essential product of the Wordsworthian Romanticism, it is possible to benefit more, both cognitively and effectively, if the recorded experience of Wordsworth could be processed sequentially and cyclically as the poststructuralists of all persuasions do.

The demonstration could be carried out in several ways depending upon the natural and cultural resources of the teacher as well as the students. One way is to ask a simple question, why does Wordsworth begin his epic with an exclamatory mark "Oh"? When asked, is it a strong note of the unbridled emotion of the Romantic poets, the fever of creative imagination catches fire and the breeze of enthusiasm from the students blows in when "blessing" is reached. A curious student asks, does the religious connotation of "blessing" suggest the "breeze" to be a god or saint? A religious minded student asks whether Wordsworth has come to the temple of Nature to be blessed. Another student wonders why the breeze fans the cheek alone and not the whole body. The seriousness of the interactive session is lightened slightly when a student jokingly asks, why half-conscious and not full-conscious? Could there be anything like intoxication behind this half-consciousness?, drink in other students. One student notices the giving and receiving of joy. Some students point to the places of origin of the breeze, both the earth and the sky. At this time an observant student recognizes the omnipresence of the breeze. Now suddenly the tables are turned against the breeze. Who is the visitant, why not visitor? Who/which came first on the scene? The peak of the session is reached when the complex question comes up in the air: who blesses whom, why, how, and when? These and many other questions can be worked out and interrelationships established for a better understanding of the Wordsworthian poem and life.

Thus productive education can be ensured with a greater awareness among teachers about their creative potential. If the teacher teaches creatively, the students would also learn creatively. When the goal of education is thus achieved, economic development is given a boost. Language and literature teaching may not bring direct economic development. But as the demonstration of the Wordsworthian poem shows the sharp imaginative power of the students could be developed and cultivated. Is there any development of any kind in the world without creative imagination?

References

Abrams, M. H. 1975. "The Correspondent Breeze: A Romantic Metaphor". In *English Romantic Poets: Modern Essays in Criticism.* 2nd ed. ed. M. H. Abrams. pp. 37-57. New York: O. U. P.

Anderson, Harold A. 1959. "Creativity in Perspective". *In* Anderson: 236-267.

—————————— . 1959. ed. *Creativity and its Cultivation.* New York: Harper Brothers.

Ansari, M. M. 1987. *Education and Development: Perspective for Policy Planning.* New Delhi: Association of Indian Universities.

Chauhan, C. P. S. 1990a. *Higher Education in India: Achievements, Failures and Strategies.* New Delhi: Ashish Publishing House.

—————————— . 1990b. *Innovations in Teaching-Teaching Learning Process.* 2nd ed. New Delhi: Vikas.

Cowell, Raymond. 1991. ed. *Critics on Wordsworth.* Readings in Literary Criticism 12. New Delhi: Universal Book Stall.

Darbyshire, Helen. 1962. *The Poet Wordsworth.* Oxford: Clarendon Press.

Hartman, Geoffrey. 1991. "Imagination in *The Prelude*", I and IV". *In* Cowell: 86-92

Khan, Mustafa. 1991. "Pathology of Higher Education". *University News.* 29:46 (November 18): 1 and 13

Kumar, S. 1992. "Communication" *University News.* February 3: 149

Margoliouth, H M 1953. *Wordsworth and Coleridge, 1795-1834.* London: O U. P.

May, Rollo. 1959. "The Nature of Creativity" *In* Anderson: 55-68.

Moorman, Mary 1957 *William Wordsworth A Biography Vol 1. The Early years 1770-1803* Oxford Clarendon Press

Morgan, Edwin 1991 "A Prelude to the Prelude *In* Cowell: 78-85

Nair, K R. Ramachandran. 1986. *The Emerging Spectrum-Essays on Indian Higher Education* Bombay. Himalaya Publishing

Osborn, Alex F. 1963 *Applied Imagination Principles and Procedures of Creative Problem-Solving* 3rd. rev. ed New York Charles Scribner's Sons.

Radhakrishnan, S 1989. *The Present Crisis of Faith* New Delhi Orient Paperbacks.

Robbins, Stephen P 1988. *Organizational Behaviour Concepts, Controversies and Applications.* 3rd ed New Delhi Prentice-Hall

Singh, Amrik. 1985 *Redeeming Higher Education Essays in Educational Policy* Delhi: Ajanta Publications

Singh, Amrik., and G.D. Sharma 1988. ed *Higher Education in India The Social Context.* Delhi Konark Publications.

Srivastava, A.P. 1988-89. "Characteristics of Modern Indian Scholarship and Learning". *Journal of Higher Education.* 14.1-3. 19-39.

Talesra, Hem Lata. 1992. "Teaching learning in Higher Education: Sociological Considerations" *University News.* 30:48: (November 30) 8-9.

Verma, Yogender. 1990 "Orientation for Quality in Higher Education". *University News.* 28:13: (March 26):3-5.

Weinstein, Claire Ellen. 1996. "Learn How to Learn: an Essential Skill for the 21st Century". *Educational Record* 77:4 (Fall): 48-52.

Wordsworth, William. 1953. *The Prelude or Growth of a Poet's Mind Text of 1805.* ed. Ernst de Selincourt. London: O. U. P.

——. 1956. *The Poetical Works of Wordsworth.* 2nd ed. ed. Thomas Hutchinson. New ed. rev. by Ernst de Selincourt. London: O.U.P.

Globalisation of Indian Business Education

To be or Not to be, That's the Question

S.K. Sharma*

Introduction

The prosperity and development of a country depends not only on its lavish resources but also on the educated mass. Education is a systematic process of instruction or training by which people learn and use their mental, moral and physical power in daily life to tackle numerous problems individually as well as organizationally. It has direct linkage with various fields like education and culture, education and production and education and employment — these are the consequential links through which education derives its justification as an instrument of development and human progress.

The term higher education refers to the education at University levels. It aims at developing the calibre in human beings through teaching and research. According to World Bank report, the higher education throughout the world is in crisis. The crisis is most acute in the developing world. The quality of teaching and research has deteriorated in many countries. While overcrowding, poor physical facilities and lack of resources for textbooks, educational material, laboratory consumables and maintenance are common problems, graduate unemployment in developing countries continues to rise.[1] The new Economic Policy (1991) has offered encouraging opportunities at the national as well as international arena which can be exploited through business education while producing the professional managers, consultants, entrepreneurs and academicians. In this paper, an attempt has been made to analyse some of the aspects of globalisation of Indian business education e.g. i) conceptual framework of business education in India, (ii) Needs for globalisation of Indian business education, (iii) constraints in the way of globalisation of Indian business education, and (iv) suggestive measures for globalisation of business education in India to cope with global economy and face the challenges of twenty first century.

Conceptual Framework

The pragmatic liberalization of economic and industrial environment as well as the policies recently announced by the Government of India towards marketization and globalisation have thrown up several challenges to Indian industrial enterprises at the national and global platform. In order to effectively counteract these challenges global business education has to take lead to groom global managers/executives and entrepreneurs. Business education creates the required knowledge, managerial skills and dexterity to keep pace with the latest advancements in business as well as industry in competitive environment. It is oriented towards inculcating *Knowledge*: related to the subject matter, *Skills* : to translate such knowledge into action, and *Motivation* : to accomplish the task.

Business education plays significant role in the higher education in India as compared to other disciplines because it is totally contrary to other streams which create job-seekers rather than job-makers. Enrolment to business education (Commerce and Management) represents about 22 percent of the total enrolment in higher education in India during the last five years i.e. 1988-89 to 1993-94[2] Business education produces entrepreneurs, professionals, business managers and consultants to steer ahead a developing country like India and to cope with the national and international competition. Gone are the days when it was believed that the entrepreneurs and managers are born not made Now the concept has changed through business education and entrepreneurs and managers are rather made according to specific requirements. In addition to this, industrial and business houses also require expertise, consultancy from eminent academicians, professional managers and consultants in different fields to deal with the various problems at their end. A review in this context of the historical experience of the USA sustains and consolidates this argument.

Business education is the combination of commerce, management and other allied branches of professional education. It is provided by the techni-

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cal institutions, universities and other professional bodies such as the Institute of Chartered Accountants of India (New Delhi), The Institute of Company Secretaries of India (New Delhi), the Institute of Cost and Works Accountants of India (Calcutta), The Indian Institute of Bankers (Mumbai), Entrepreneurship Development Institute of India (Ahmedabad), Institute of Personnel Management (Calcutta), The Institute of Chartered Financial Analysts of India (Hyderabad), Indian Institutes of Management (Ahmedabad, Calcutta, Bangalore and Lucknow) and other management institutes and associations. All the above have the common goal i.e. producing manpower with knowledge and professional skills to deal with the fast changing environment of business domestically as well as globally. The scope of business education covers commerce, accounting, cost accounting, secretarial practice, banking and finance, entrepreneurial development and management, etc. In addition it also covers the social sciences as well as various other branches of science like sociology, psychology, political science, economics, anthropology, geography, mathematics and statistics, etc. The present paper is confined to commerce and management disciplines under the banner of business education.

Actually speaking, business education is the refined name of commerce education just like 'Old wine in the new bottle'. Commerce Education was started in 1913 with the establishment of the Sydenham College of Commerce in Mumbai. However, it was only in 1961 that the Special Committee for Commerce Education (The VKRV Rao Committee) identified commerce as a distinct educational course and was adopted by the Indian universities. Today we are proud of galaxy of magnetic personalities like Late Prof. A.N. Agrawala, Late Prof. A.Das Gupta, Late Prof. D.N. Elhance, Late Prof. B.C. Tandon, Late Prof. C.D. Singh and Late Prof. V.K. R.V. Rao who have made remarkable contribution in the field of business education in India. Business education offers to equip an individual to perform the key role as an entrepreneur, professional, manager, business counsellor/consultant and academician.

The New Economic Policy (1991) announced by the Narasihma Rao Government comprised various policy measures and changes. The main thrust of the policy was to free the Indian economy from unnecessary bureaucratic control and to introduce liberalization through decontrol, delicensing and deregulation with a view to integrate the Indian economy with the global economy and to remove restrictions on foreign investment and technology in the high priority sectors. This policy document seeks to bring a greater competitive environment nationally as well as internationally. If India wants to keep pace with the global environment there is a great need for globalisation of Indian business education which will develop the global business managers, professionals, entrepreneurs and consultants with global understanding to cater the needs of global character. After adopting this process our products (students) will be easily acceptable in the world job market and will have ample opportunities to choose their career as professional managers/executives, consultants and entrepreneurs. An eminent scholar in the field says, "the management of an industrial enterprise is a complex task, only trained and skilled persons can do the job effectively. The complex function of a chief executive is to constantly plan organisation relating to finance, production, sales, marketing and personnel. It is in this way highly

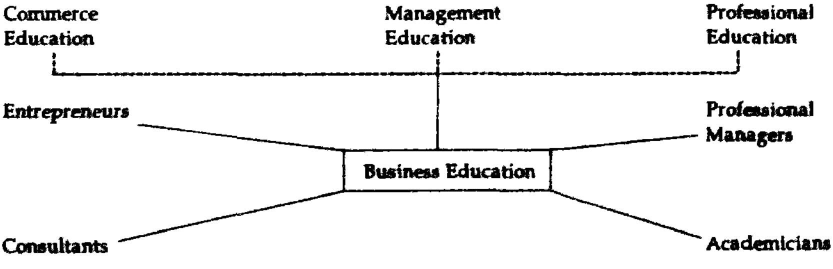

Fig. 1: Conceptual Framework of Business Education in India

skilled job which only a 'professional manager' can do with efficiency and effectiveness.[3]

Constraints

Today larger number of universities and management institutes/business schools are providing business education but there are only few universities and management institutes which are providing qualitative business education. Indian business education has fallen far below the global standards due to different reasons. In the era of liberalization and globalisation multi-nationals have used a 'geocentric approach' and are not only confined to trade and industry but also emerging in the field of business education. There are several Australian, American and Canadian universities which have already captured our green carpet in the field of business education. In this scenario, the need of the hour is to globalise our business education as per global requirements. This is an alarming challenge for Indian universities and management institutes/schools because of the traditional curricula in the majority of business schools and lack of suitable teachers, well equipped libraries, modern teaching aids, rich study material, resources and infrastructure facilities, research facilities for teachers, collaboration of Indian business institutes with other business institutes outside the country, co-ordination between commerce and management streams, interaction between business schools and industries, and the present liberal approval policy for business schools.

Suggested Measures

In the light of the above constraints, the following suggestions are offered for globalisation of Indian business education:

1. Institutes related to business education should revise their curricula thoroughly in the light of global environment. In addition to present areas like finance, marketing, production, personnel, sociology, psychology, economics, anthropology, mathematics, statistics and computer etc, course contents like international politics, international economy and world history with a particular emphasis on culture and value system etc, be added on priority basis.

2. Teachers are a great asset for any educational institution. A teacher has an obligation and commitment to help the learners learn about various theories and paradigms, etc. Teaching, research and consultancy are three integral functions of a teacher in the area of business education. The selection of a teacher in this area should be based on written test as well as personal interview performance. The candidate who has deep knowledge about the global environment as well as interdisciplinary areas should be given preference. It has been found that after passing the examination majority of the students choose their career as professional managers because of attractive pay and perks. At this juncture students with high calibre should be encouraged to join the management institutes by offering them attractive pay and perks.

3. A well equipped library, which is the nerve-centre of any educational and research programme, should be made available to the teachers, students and researchers. A business institute's library should have selected books in all functional areas of science. It should also subscribe to the journals/periodicals of repute from inside and outside the country to update with the contemporary developments.

4. In order to enrich the quality of teaching at this level the institute should have modern teaching aids like audio/video cassettes in related areas, overhead projector, slide projector, TV and VCR, etc. In addition to this, the institute should have computer laboratory with state-of-the-art hardware, software and statistical packages which are relevant to the students, teachers and researchers.

5. Students should be given rich study material prepared by a team of eminent experts of national and international repute.

6. Globalisation of Indian business education is possible only when sound infrastructure facilities and support services are provided to the teachers, students as well as researchers. In this regard business institutes are advised to meet their expenses through their own earnings by way of consultancy which is emerging as a new trade and research projects. These institutes should not depend on government grants due to the paucity of resources in the education sector. The overall expenditure on higher education as per cent of total expenditure is hardly 17% in India as compared to 40.2% in USA, 30.7% in Australia, 29.1% in Canada, 22.5% in Japan, 18.9% in U.K. and 18.6% in China.[4]

7. In addition to internal research facilities made available to the teachers by the institutes they should be encouraged by the industries and govern-

ment machinery for research at global level by making provision for grants for major and minor projects and by instituting career awards, research associateships and fellowships, etc.

8. Business institutes should have collaboration with the business institutes outside the country which will focus on joint research interests. Such a collaboration will involve the exchange of academic staff, students, papers, texts and relevant material, etc. This exercise will offer ample opportunity to our teachers and students to interact with the beneficiary countries.

9. There should be proper coordination between commerce and management education. The introduction of management courses under the banner of the faculty of commerce or independently in Indian universities has created problems for both the disciplines. Core faculty of commerce has diverted its attention towards management education and proved its excellence both in adaptation as well as competence. They give step-motherly treatment to commerce education. Diversion of core faculty of commerce and UGC's soft corner in terms of infrastructure facilities as well as support services, etc to management education have compelled commerce education to reach a melancholic stage in India UGC and AICTE should provide grants as well as infrastructure support to commerce education in line with management education. Senior faculty members in both the areas should give due importance to both commerce and management education and equip our students equally in both these fields so as to enable them to withstand the challenges of the world economy.

10. There must be an effective interaction between business schools and multi-nationals which is vital for the survival of Indian business education globally. Executives working in the multi-nationals must be invited to design the syllabus which may suit their requirements. These executives must be invited by the business schools to share their views with the students and teachers. In addition multinationals should provide in-plant training to our students. These activities will definitely expose our students to meet the challenges posed by the global environment. These exercises will be fruitful to both multi-nationals as well as students. If possible, multi-nationals should also provide certain funds to our business schools for their better infrastructural facilities.

11. During the last 3-4 years there have been mushrooming of business/management schools approved by the All Indian Council for Technical Education (AICTE), New Delhi. The All India Council for Technical Education is a statutory body under the HRD Ministry which accords approval for introduction of management schools in India. The people are very much shocked and suspicious about the role of the AICTE and comment like "What does 'approved by AICTE' of HRD Ministry mean? Is AICTE approval associated with any quality and standards of management education?" They say that most of the MBA institutes 'approved by AICTE' seem to be in money making business with no commitment to educational quality, innovation, publication, consultancy or brainstorming workshops.[3] When we are talking about the globalisation of Indian business education there is a great need of quality management education. In this connection AICTE should take care about the quality management education and should not be liberal while according approval to management institutes. A high powered committee should be appointed by AICTE to look after the day-do-day functioning of approved management schools/institutes.

12. Seminars, workshops, symposia and conferences should be organised by the business institutes from time to time. This platform will provide opportunities to various related parties to exchange their views and problems The expenditure on these programmes should be borne by the industrial/business houses

13. Business institutes should have the membership of management associations/bodies of international repute to be in the know of the latest developments in the fields.

14 Indian business schools should offer business education in SAARC & Arabian countries to promote their industrial/business culture for the welfare of the people and to improve the quality of life for better tomorrow.

15. Strategic alliance strategy has become more popular in global arena. This strategy can be adopted by the business schools which will curtail the costs of education.

Conclusion

Business education offers to equip an individual to perform the key role as a professional, manager, entrepreneur and business counsellor/consultant. Business education plays a significant role in the higher education as compared to other streams. With the globalisation, liberalization as well as

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Administration of University Departments and Colleges

D. Rajagopalan *
S. Aravanan **

The administration of university departments depends very much on the administration of the university itself. The university should be allowed to enjoy sufficient amount of autonomy — both external and internal in its administration; then only it can and will allow its departments to be administered in an autonomous way. Thus the question of administration of university departments is very much linked with the question of administration of university itself.

A university is administered by numerous elected bodies and personalities who are not elected. The most important bodies consist of the Court or the Senate, the Syndicate or the Executive Council, the Board of Studies, the Academic Council or Committee, the Faculty Council, the Finance Committee, the Selection Committee etc. The key positions in the internal administration of University are the Vice-chancellors, the Pro-vice-chancellors, the registrar, the Controller, the Finance Officer, the Dean of student welfare, the Dean and Secretaries of faculties and Heads of the departments. Now the question arises whether the internal administration of a university should be autocratic or democratic. The internal administration of a university should be democratized. It should not be 'an ivory tower of elites'. The representation of lay elements including officers, employees and students on the various governing bodies of the university is necessary and justified in view of the nature of relationship between the university and society. The principal function of the administration is to serve the academic interests of the university. Hence dominance must be of the academic element. In the governance of a university the principle that good ideas often generate at the lower levels of the hierarchy must be recognised and respected.

University Departments

The departments of a university are its main operational units on the academic side. The universities should give considerable autonomy to their departments. The freedom and autonomy of university departments must be recognised and respected in the same spirit as the university wants it for itself. The success of the administration of a department depends much on the efficiency of its Head because he is the person who maintains direct contact with the university authorities. In the course of his contact with the university authorities he may have to face many problems — both of his own creation and those imposed on him unnecessarily — but his success lies in his ability to surmount the problems. The Head should try to maintain cordial relationship with the university authorities because he has to depend on them for administrative/financial approval for his academic proposals. But in the name of maintaining cordial relationship with the university authorities he need not reduce himself to a mere puppet in their hands. He has to assert his position as the Head of an academic unit. At the same time he should not adopt a hostile attitude towards each and every act of the university. Thus he must be reasonable, tactful, intelligent and cautions in maintaining his relationship with the university. The Head of the department must also be successful in maintaining good relations with the external parties like public, industrialists, government etc. These sources offer very good opportunities for the development of academic interests and the Head must be capable of utilising these opportunities to the fullest possible extent. For eg. these days a lot is talked about cooperation between industry and higher education particularly in applied research and technology where one sector can use the expertise available in the other. This is possible only when the Head of the department is efficient and willing to tap the resources available.

What all has been said above in connection with the administration of the university department to external administration. Now let us turn to internal administration. While internally administering his department, the Head has to deal with the faculty and students. Of course he has his own administrative staff setup also. Compared to a college, the university department will have less number of students and the students teacher ratio will also be favourable. So the Head will not have any problem (though there may be one or two minor problems which are unavoidable) in managing the students. Regarding the administrative staff that he has to control he may not have any serious trouble because they are there only to assist him by providing secretarial assistance. They simply follows his guidelines. Now let us come to the question of faculty working with the Head. (We do not want to use the words 'under the Head'). The democratic Head will find no difficulty in managing the faculty. Because he will give the same amount of autonomy and freedom to his colleagues (since we are talking of a democratic leader we prefer to use the word colleagues to the word 'subordinates') as he expects to get from the university authorities for himself. The democratic Head will not stand in the way of faculty in developing their career, of course without affecting their normal duty in the department. He will and can provide all possible help for the development of faculty. The faculty also should realise their responsibility and position and contribute their best for the smooth running of the department because the administration of the department is not a one man show. It is a joint effort and without the willing cooperation of all the faculty members the Head cannot administer the department successfully. "To have fifty friends is not enough but one enemy is too much ...." (*B.Sheik Ali, Former Vice-Chancellor, Goa University*). Hence the faculty should render all possible assistance to their Head in solving the problems that creep in during the administration of the departments. The idea of "Grow with the institution" is to be realised. Growth of individual faculty depends upon the growth of the department. Hence in mutual interest the department should run.

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An autocratic Head of department will have problems most of which will be of his own creation. While we were discussing this issue in one of our orientation programmes in our Academic Staff College some of the participants who were fed up with the autocratic way of their Heads went to the extent of saying that there should be no position as Head of the department. But this is not the right view. There should be someone as Head of the department who shall look after the affairs of the department and without whom the entire work of the department may come to a stand still. This problem of autocratic Head can be solved to some extent by resorting to 'Headship by rotation'. This serves two purposes first, the autocratic Head becomes former Head and as any other faculty, realises the reality of the situation. Secondly, the rebel faculty (if there is one such) who becomes the new Head by rotation will realise the difficulties associated with the position of Head. In this connection the views of Prof. Venkataiah, Professor and Dean, Faculty of Education, University of Mysore may attract extremes of opinion: "In principle, the rotation of Headship is very much welcomed. But how many Heads under rotation are able to maintain the required discipline in and outside their departments is a major question for the university authorities to think seriously".

Thus the job of the Head of department is a very difficult one. The efficient administration of the department hinges heavily on its Head who may have those desirable qualities that are associated with successful Heads : 1. Intelligence; 2. Broad interests and a sound educational background, 3. Initiative and creative ability; 4. Sound judgement; 5. Ability to take quick decisions on the basis of a proper evaluation of the relevant facts and factors; 6. Mental and emotional maturity; 7. Sense of responsibility; 8. Ability to deal with people and secure their willing cooperation; and 9. Enthusiasm. This is only an inclusive list and not an exhaustive one.

Colleges

Administration of colleges is a very difficult task — more difficult than the administration of a university department. The administration of a government college is still more difficult. Problems spring up from many sources—students, teachers, parents, public and government. The entire responsibility of administration rests on the shoulders of the Principal. Very much depends upon the acumen, skill and efficiency of the principals. Principals, when appointed from among the teachers of colleges, may be said to have changed their roles from technical to administrative. As teachers, they are mainly concerned with giving lectures, setting question papers, valuing answer papers, doing research etc all under technical role and now as principals, they have to manage men, money and materials. In a technical role one is accountable for his performance only; but in the administrative role he is accountable for the work of all under his control (*R.Kanagasabapathy*). Thus the task of a principal is really a very difficult one.

In order to study the issues connected with the administration of colleges by Principals, the National Institute of Educational Planning and Administration (NIEPA) analysed 160 case studies prepared by college principals, who in previous years had attended programmes at NIEPA (*Manju Narula*). Out of 160 case studies, 60 were of coeducation colleges, 57 of women's colleges and 43 of colleges having concentration of SC and ST students. The problems / issues which have been highlighted by the college principals are summarized hereunder:

1. There should be some coordination among the college, university and government, because college administration and management are controlled by both the university and the government. The university has academic control while the government has financial control. Both these function at cross purposes and the college has to work under both. The college should have some autonomy especially in matters of restructuring of courses and in conducting examinations;
2. University Grants Commission (UGC) lays stress on staff improvement and teacher orientation programmes but the state government does not extend any help. In fact most of the UGC schemes cannot be implemented because of the apathy of the state government;
3. Even in the matter of appointment of staff a lot of time is wasted and teaching suffers;
4. There should be uniformity in administrative practices between private colleges and government colleges,
5. Administrative procedures are not simplified and restrictions imposed by government are too many. If one college wants to start any course like industrial chemistry, paper pulp technology etc based on the socio-economic needs of the region, it faces many difficulties and the state government takes very long to sanction the posts of teachers in these new courses,
6. Too much decentralization at government/university levels has made it difficult for the principals to take quick decisions. Owing to small number of administrative staff there has been an increased workload on the employees resulting in slow communication and poor feedback to the office;
7. Admissions are done not taking into consideration the infrastructure facilities, generally there are difficulties regarding library and laboratory facilities. Uniform rules and regulations should be framed for admission. Merit should be the basis for admission. There should not be any attempt to accommodate favourites;
8. The recruitment of teachers is not rationalized resulting in very high proportion of adhoc teachers, sometimes as high as 50%. These teachers do not devote their time to teaching with full vigour due to frustration;
9. Student unrest is due to student union elections, as well as interference of local politicians. Sometimes weak administration at the university / college level also creates student unrest;
10. Students hailing from different strata of society represent different socio-economic backgrounds. The principal has to cope with their parents/guardians who form a heterogenous group. The teaching staff members have an ethos of their own. It is the task of the principal to coordinate these diverse agencies;
11. Most of the colleges are not sent various guidelines issued by the UGC and as a result thereof they do not benefit by the UGC assistance. Most of the funds released to the university by the UGC are spent on the development of the university campus and the colleges remain starved;
12. Generally the institutions do not provide any research facilities and the teachers do not get an opportunity to attend the orientation courses. Most of them are not aware of the modern methods of teaching/learning and are reluctant to work beyond office hours. But some college principals felt that if the existing staff members were engaged in research work, either in doing their Ph.D. or M.Phil. on a part time basis, they experience practical difficulties. They are not able to do full justice to their teaching work and to their research activities. Quite frequently they are forced to take leave, which affects academic work. Research should not be at the cost of teaching/learning programmes of the institute. Teachers doing their M.Phil./Ph.D. should be given fellowship or study leave facilities and substitutes appointed in their place.
13. One of the important problems faced by the college principals is mobilization of financial resources. The problem is more with the private colleges (though many of them are affluent) than with the government colleges. Government

colleges are able to get their resources from the public exchequer but the private colleges are left to find their own resources.

In addition to the above, the following issues also are worth mentioning:

1. The principals experience a number of difficulties in the conduct of examinations. The system itself is facing multidimensional problems. All sorts of malpractices are being resorted to. The examinations are not being held in time. Secondly cases are many where the teachers themselves engage in assisting the students in their malpractices. In such cases the job of principals becomes much more difficult. Thirdly, checking unfair means in examinations leads to students getting lower marks as compared to those institutions where they are not so particular, and as a result students resent this and feel bad.

2. Another important problem area in the administration of colleges is maintenance of discipline The principal with the help of staff council discharges this important duty. Left to himself any principal has sufficient powers in this regard. But the real trouble starts when outsiders interfere in the maintenance of discipline. When the principals take stern action against miscreants among students, in some cases outside parties interfere and the principals are forced to revoke their own decisions. The role of politicians in certain colleges is not conducive to the maintenance of discipline. We are reminded of a case where a principal of a government college in our area took severe disciplinary action against some of the misbehaving students. But the principal had to cut a sorry figure because of the interference of the politicians then in power, in favour of the students. That principal had no other alternative but to revoke his own order. If such is the state of affairs it is extremely difficult for any principal to ensure discipline;

3. An equally important feature in the administration of colleges is the need for existence of cordial relationship between the staff members and principal. In most of the colleges there are two groups among staff members — one is for the principal and the other is against the principal. Such groupism spoils the required healthy atmosphere in colleges. The principal should not identify himself with any group and he should be above all groups. Caesar's wife must be beyond suspicion. Similarly a frequent charge of criticism levelled against principals by staff members is the discriminating attitude of principals in favour of certain staff members. The criticism will be very severe especially at the time of selection of candidates for Faculty Improvement Programme (FIP) or for sponsorship to some courses. Some staff members also often resort to a hostile attitude towards principals even on insignificant matters. They should realise their responsibility and give a helping hand to enable the principal to sail the ship of college administration smoothly. Without the willing cooperation of the staff members the principal, however efficient he may be, cannot run the administration effectively;

4. A problem which often creeps in this connection is the dissatisfaction of the teaching staff members against the attitude of some of the administrative staff members of the college. Here the principal has a crucial role to play in such a way that the interests of none of the parties are affected.

Suggestions

The following suggestion were made by NIEPA *in connection with the administration of colleges*

1. There should be liaison officers appointed in the Secretariat or the Directorate of Higher Education whose main job should be to visit the colleges to find out their problems and to suggest to government the ways and means to solve these problems They should enjoy the status of a senior professor/principal of a college and should be able to pay attention to the bottlenecks and get the various sanctions for expenditure expedited,

2. The university professors should not live in their own ivory towers thinking that they are superior to all the college lecturers They should often visit the colleges to give extension lectures to them. This interaction between the university and college teachers will go a long way not only in widening the mental horizon of the college teachers but also in keeping them acquainted with the latest information Such visits of the university professors to the colleges and vice versa should be made compulsory;

3. The unhappy state of affairs as it prevails today regarding the fight between the university and the government should stop at once If the government and the university come to terms, a healthy tradition will be set up. The officers of

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Academic Research & Practical Librarianship

Need for Urgent Reform

C.V. Subba Rao*

A working librarian is too busy with organizing the library resources, and meeting the needs of users, besides administering the library staff. They do gather instances on problems of work, resource organisation, users aspects, but find no time to go into detail. If they do, it is during weekends, holidays, late into the nights, and even by going on leave or rarely in collaboration. Even then, a few very important aspects alone could be attended to. That means, Research is extra labour of love which eats into margins of leisure, under real-good-work-pressure.

Normally the problems do not wait or give time for a leisurely detailed study. Immediate decision is needed, and no relevant study is available. With a feeling for facts and work situation, a short-cut or ad hoc decision is taken, mentally storing the event for detailed work, if time permits. The pressure of work, the standing reader, the conflicts in office, and the datelines, nay hour lines, contribute to decisions which should be loaded with research content, but taken with a hunch. There is pressure, there is use, the situation is live and real, but enough time or an organisation work outlet for such research, does not exist.

The work standard of libraries or in any intellectual effort, has to allot around 25% of work time, to attend to live research, under pressure at the work spot. Otherwise, ad-hocism leads to unscientific way of conduct of library work, that would do long time disservice to the subject, hinders growth of the subject, as 'needs' lead to real and useful results, with benefits that are immediately absorbed into work. Or, every library should have a *Research Cell within*, as an essential element of the library structure.

Society has not set recognition for such research. But the educational system has it in universities, where Ph.D. or D.Phil are awarded. Had independent India absorbed 50% of work-oriented live-need-based-wanted research, there would be less complaint. In the universities, the research goes with teaching for degree or Master's courses, and becomes an elevation over and above. The young brilliant student is not experienced, has not faced the subject in a real conflicting live-situation, and so work-oriented research is foreign. Even to the Professor given to teaching and research and years of service in a university in a calm environment, fundamental aspects get greater attention and practical problems get least attention, for the total university system is away from work and society, though dedicated to teaching. Rarely are working libraries teaching, or teaching staff ever worked in a library. Where a subject has practical and societal applications to the extent of more than 80% of the total sphere, in the university research studies it finds no place! Questionnaire preparation on a hypothetical situation, gathering opinions by survey and arriving at conclusions, is not any analysis of a "real-problem-oriented situation". At best it is "Gilted brass looking gold". Had somebody after 10 or 15 or more years of work experience, with 5 to 10 papers on a problem taken up such study, then the result will be real. Experience, grassroot level work, a bubbling intellect and a struggling mind, chasing or searching a solution, is the essential background for research degree. Mere academic brilliance with added inexperience, does not lead to advances in a subject field, where 80% is practical hard work in a library. If theory divorces practice, the subject is sure to move backward with more PhDs, D Phils pouring out of university schools

When science and technology parted company — though Fundamental Research in Technology goes to the original science — Technology established its own field of research such as use, repair, operational, incremental and commercial aspects. Railways, telecommunications, electronics, computers, roads, river valley projects, forests, traffic etc have established their own research, and do not transfer their application problems to the origin — science of the concerned technology.

In subjects like law, education, medicine/public health, drama, dancing, music, cinema, television etc the practical side is given the needed attention. In almost all the instances the practitioners are the teachers also, and teachers also practice.

In library science too, in 1940s to 1960s, the teachers were part time but full time library staff.

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Dr. S.R. Ranganathan, Prof. Kaula, Mr. Ramabhadran, Dr.Thomas, Mr. Marshal were all librarians and professors too. Those were the diploma days in universities. After UGC promulgated the professional equation that librarians are academic, and graduation started at B.Lib. Sc./B.Lib. I. Sc. and Masters as M.Lib. Sc./M.Lib. I. Sc., the gulf between teaching and practical librarianship/information service widened. Academic grades and govt. grades at state or centre, gave a status distinction for the difference. From 1970s onwards we have professors in library and information science who were never librarians, and 90% librarians have no chance or choice of teaching. Hence academic LISc is drifting away from practical librarianship. Academic research is so unreal that nothing enters practical librarianship/information service. Practical aspects which are 80% of the subject and without which the research has no meaning, have no place in academic research.

Hence like technological research, libraries/information centers should have their own Research Cells. Or, the example of USA, where academic schools in LISc are getting closed, as they have become irrelevant and new information technology and service oriented new schools, and syllabuses are cropping up, will dawn inevitably in India. Under the impending and booming threat, perhaps one year librarianship/information service should be made compulsory for university teachers in LISc, in every 3 years; and one year research/teaching in LISc compulsory for working librarians/information scientists, as an essential inviolable service condition.

India cannot afford to have irrelevant research for decades by inexperienced theoreticians. Rather the research age in applied subjects should be 35 or 40 and not 25, to allow research oriented experience to seep into academic research. Reform is direly needed in LISc academic research, to be relevant and take the profession forward, besides being socially useful.

Globalisation of Indian Business Education

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marketization of Indian industrial culture, we stand on the threshold of twenty first century with copious opportunities and challenges on many fronts. In order to survive in this arena, the urgent need is serious thinking in terms of globalisation of Indian business education which will develop the professionals, managers, entrepreneurs and consultants with global understanding who will be able to cope with the global economy.

> *"Knowledge is precious to us, because*
> *we shall never have time to complete it"*
>
> — Rabindranath Tagore

References

1. Report of the World Bank · *Higher Education in Crises*, Association of Commonwealth Universities bulletin of current document, London, No. 115, Oct. 1994.

2. Annual report: University Grants Commission, New Delhi, 1993-94.

3. Tandon, B.C. : Professional Management in Public Enterprises, *Business Studies*, The Journal of the Department of Commerce, Shaheed Bhagat Singh College, New Delhi, Vol. No. 7, 1987-88.

4. Tilak, J.B.G. : *On Funding of Higher Education in India*, *University News*, Association of Indian Universities, New Delhi, Vol. XXXIII, No. 45, Nov. 6, 1995.

5. Ahuja, A : An Education Scam, *The Economic Times*, New Delhi, Aug. 8, 1996.

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these two agencies should often meet and take stock of the situations and things.

4. The government should devise such a formula as may enable the colleges to receive the various grants in time.
5. The government should set up separate Board of Higher Education which should look after the educational needs including the conduct of examinations of the degree colleges in state, and
6. Every state should have its own UGC or an *autonomous regional office of UGC*. This state UGC should finance the terms of the colleges and issue guidelines for their development

References

1. A.H. Hommadi — *University Administration in Developing countries*, Delhi, Indian Bibliographies Bureau, 1987
2. R Kanagasabapathy, Conflict Resolution in Management of Colleges, *University News*, May 16, 1988.
3. Manju Narula, Issues in College Planning and Management, *University News*, May 23, 1988.
4. B.Sheik Ali, Universities of Tomorrow, *University News*, March 7, 1988.
5. N. Venkataiah, Problems of Unrest in University Campuses, *University News*. December 16, 1991.

ATOMS FOR PEACE

Prof. Yoginder K. Alagh, Minister of State for Planning & Programme Implementation and Science & Technology, Government of India, delivered the convocation address at the Fifteenth Annual Convocation of the Mangalore University. He said, "By reorienting technology policies which are consonant with the new liberal economic policies, it shall be possible to reduce costs, improve reliability and also quality of technology. This will make our technologies competitive in the global market. Investment therefore for the development of technology in strategic areas such as nuclear energy needs to be stepped up in our country. In the peaceful use of nuclear energy lies the key to the solution of many of our problems". Excerpts

The last year saw many proud achievements of Indian science. For example, we released hybrid paddy varieties to the farmer, being the second country in the world to do so on a substantial scale. Dr. Siddiqui's group, which engineered this breakthrough, deserves our congratulations. We successfully commissioned the Kamini reactor at Kalpakkam and tested under stationary conditions the cryogenic engine for 200 seconds at Mahendragiri. Our scientists are on their way on the thorium route to nuclear power and to launching heavier satellites successfully with cryogenic backed rockets. Our space programme is well set now for commercial applications. Sattelite imagery from the IRS is of some of the best resolutions in the world and is now available through commercial channels at home and abroad. In the Ninth Plan, ISRO will market many educational and entertainment products for use including, I am sure, transponders for direct to home television as being now considered for the new broadcasting apparatus in the country. Mangalore University has a fine tradition of nuclear science and so I propose to speak on atoms for peace.

Overview of Nuclear Power

Since 1954, India's nuclear programme has been conceived as a three-stage plan aimed at eventual utilization of large reserves of Thorium.

Stage-I: Establishment of natural uranium fuelled and heavy water moderated thermal reactors producing power and also fissile material plutonium as a product.

Stage-II: Fast breeder reactors *which would use plutonium* either with natural uranium in the blanket so as to produce more plutonium or with thorium in the blanket to convert part of thorium *in the fissile* U-233.

Stage-III: Fast (or thermal) *breeder reactors fuelled with plu*tonium (or U-233) with thorium in the blanket to convert part of thorium into fissile U-233.

India figured on the nuclear map of the world in 1969 with the two reactor units at Tarapur becoming operational. The first stage of Indian Nuclear Power Programme based on Pressurized Heavy Water Reactors (PHWRs) has been implemented to a great extent and it has attained a good level of maturity. Presently, eight Nuclear Power Stations, with an installed capacity of 1540 MW(e) are in operation, and two units with a capacity of 300 MW(e) are under refurbishing. India has about 130 reactor years of operating experience and the operation of nuclear power stations has been free from any incident of radiation release. Power generated by these reactor units has crossed one lakh million units (Mus). Four units of 220 Mwe are in a advanced stage of construction. Detailed designs for 500 Mwe of Pressurized Heavy Water Reactors (PHWRs) series have reached an advanced level of completion. Sites for setting up of 6x500 Mwe PHWRs and 4 x 220 Mwe PHWRs have been cleared and advance action for developing infrastructure and procurement of critical items has been taken up.

Both the old (Tarapur, Rajasthan, and Madras) and new generation nuclear power stations (Narora and Kakrapar), have performed very well attaining cumulative life time capacity factor near to normative value and selling power at competitive rates. While operating these plants, number of challenging maintenance activities have also been handled successfully by developing indigenous technology.

A beginning has been made for the second stage of nuclear power programme with the setting up of a Fast Breeder Test Reactor (FBTR) at Kalpakkam, and recent commissioning of a 30 Kwh research reactor "KAMINI", which uses Uranium 233 as fuel (this is discussed later). It is planned to set up one unit of 500 MW(e) Protoype Fast Breeder Reactor (FBTR), the design of which is fast progressing.

India has also mastered fuel

lege, Manipal; the Department of Physics of the Cochin University and the Department of Electrical Engineering in IIT, Madras. Many more such research programmes are under way. For example, the Projects sponsored by DAE around Kaiga site to local universities are as follows:

1. Mangalore University was awarded research project sponsored by DAE on the "Distribution of natural and artificial radioactivity components in the environment" of Coastal Karnataka and Goa.
2. Department of Community Medicine, Kasturba Medical College, Manipal, is carrying out the Epidemiological studies for population around Kaiga site
3. The Department of Post-Graduate Studies and Research in Aquaculture and Industrial Fisheries of Karnataka University at Karwar, is carrying out studies on physico-chemical and biotic characteristics of Kali river.

Conclusion

Self reliance has to be re-defined in terms of global competitiveness and strategies required to be re-shaped to achieve this By re-orienting technology policies which are consonant with the new liberal economic policies, it shall *be possible to reduce costs, im*prove reliability and also quality of technology. This will make our technologies competitive in the global market. Investment therefore for the development of technology in strategic areas such as nuclear energy needs to be stepped up in our country. In the peaceful use of nuclear energy lies the key to the solution of many of our problems.

RASHTRIYA SANSKRIT VIDYAPEETHA
(Deemed University)
TIRUPATI 517 507.

Applications are invited from Indian citizens for the following Teaching and Non-Teaching posts in the Vidyapeetha so as to be received by the undersigned on or before 5-00 p.m. on 21st May, 1997.

GENERAL

1. READER (NYAYA) 1 POST (RS. 3700-5700)
2 LECTURERS (RS 2200-4000)
I) EDUCATION: 1 POST. II) VISISTADVAITA VEDANTA: 1 POST
III) JYOTISHA 1 POST.

UNDER SPECIAL RECRUITMENT DRIVE FOR SC/ST

1. LECTURER (EDUCATION) 1 POST RS (2200-4000)
2 JUNIOR PERSONAL ASSISTANT 1 POST RS. (1400-2300)

Prescribed application forms along with details of qualifications and other details can be had from the undersigned by sending a self-addressed stamped (2-00) envelope of 9"x4" along with a Demand Draft drawn in favour of Registrar (Rs. 50-00 for Reader, and Rs 30/- for Lecturers posts) clearly mentioning in the requsition letter, the name of the post for which the application is sought. The SC/ST candidates are required to pay only half of the amount prescribed duly enclosing their CASTE certificate along with the requisition for application

REGISTRAR

UNIVERSITY OF PUNE

Admission Notice : 1997-98
Department of Communication Studies
Course : Master of Communication Studies
(Specialisation : Video Production or Media Research)

Applications are invited for admission to Two Year (Full Time) Degree Course of Master of Communication Studies (M.Cm S.) Total seats are 35. 30 seats for Indian Students and 5 seats for Foreign Students

1. Minimum Qualification : B E./B.A./B.Com./B Sc./B.Journalism/Any Degree/10+5 Diploma Course equivalent to degree.
2. Last Date of Submission of Application Form: 7th June, 1997
3. Entrance Examination : 13th June, 1997
4. Time : 10 00 hrs. to 13.00 hrs.
5. Venue : **Dnyaneshwar Hall,** University of Pune, Pune 411 007
6. Price of Application form with syllabus : Rs. 300/- by Cash/Demand Draft
7. Examination Fee to be paid with application form : Rs. 200/- by Cash/D.D.
8. THOSE WHO APPLY FOR ADMISSION AGE ELIGIBLE TO APPEAR FOR ENTRANCE EXAMINATION. NO SEPARATE CALL LETTER WILL BE ISSUED.

Applications Forms / Prospectus (Syllabus) available in Publication Section, University of Pune, on payment of Rs. 300/-. If the syllabus is to be sent by Post send Demand Draft of Rs. 320/- drawn in favour of The Registrar, University of Pune, Pune 411 007.

Candidates appearing for final year degree examination are eligible.

Advt. No.: 09
Date : 9/4/97

Dr. M.G. Takwale
Acting Registrar

Institute of Equity and Development

The Gujarat Vidyapeeth organised a short-term Institute on "Equity and Development" under the auspices of its Department of Rural Economics and Department of Social Anthropology of the Vidyapeeth.

It arose from the imperative need to search for new development strategies which at the same time would ensure both development and equity. The concept of development which focused primarily on economic growth needed to be thoroughly reviewed. This process had given rise to technological and economic model of progress in which economic growth was the chief driving force.

The basic objective of development should be the enlargement of people's choices. It had to be people-centred. Sustainable development addressed equity within and among generations. All people must be empowered to participate in the design and implementation of key-decisions that would shape their lives.

Development must transcend purely economic dimension in order to include social consideration. It must cover cultural and spiritual self-realisation embracing creativity, quality of life and the rights of human beings.

The main objectives of the Institute were (i) to address issues related to serious drawback in our knowledge of past paradigms; (ii) to examine the nature of the current economic, social and political crises and sensitize and familiarize participants with the major issues concerning poverty, hunger, inequality, illiteracy, gender discrimination and ecological crisis; (iii) to focus on evolving new development paradigms which could bring about radical changes in long-standing premises for economic, social and political processes; (iv) to act a 'think tank' dedicated to applying the knowledge and skills of social scientists to serve the interests of the under-privileged and disabled in our country and elsewhere; and (v) to create sensitivity and awareness among the social scientists to their individual and collective responsibility to build a better world for the under-privileged, disempowered, and exploited people all over the world.

The programme included lecturers on : (A) Development Experience of East Asia, India and Gujurat — Learning from East Asia experience : A new development paradigm from East Asia; Social change in East Asia; and Inter-relationship between development, equity and political structure. (B) India Adrift in Search for New Solution — Major landmarks in India's development; Social changes since Independence; India in search for new solutions, Structural relations between development, equity and political power; and strategies for our future development. (C) Whither Gujarat — Gujarat's place in India and the world; Social changes since its formation in 1960; Fundamental problems facing Gujarat; Devising strategies for solving these problems; and Prospects for the future.

Hopkins-Hinduja Hospital Management Institute

Johns Hopkins University in Baltimore, one of the most prestigious medical colleges and hospital training institutions in the US, is reported to have entered into a collaborative venture with the Hinduja Foundation to establish a hospital management institute in Hyderabad.

The contract, worth over $2 million and having a five year tenure, with Hopkins providing the knowhow, was signed by Ms Laura Morlock, head of the University's Health Policy and Management School, and SP Hinduja, chairman of the Hinduja Foundation.

The school at Hyderabad, to be called the Hinduja Institute of Hospital Management, will be part of the Administrative Staff College of India (ASCI), the premier management institute in Hyderabad established in 1956.

It will be part of the ASCI's Centre for Management Education and will serve the training needs of health care, infrastructure and technology managers.

The Hinduja Foundation is a charitable foundation involved in supporting health care, education, welfare of the disadvantaged and a host of other activities.

The Hopkins-Hinduja venture, envisaged to begin operations in June this year, for the first year will involve Hopkins faculty going out to Hyderabad and interviewing and then training the Indian faculty, which would number five or six.

The first group of 25 students will be admitted in June 1998 for the two-year postgraduate diploma which would involve an intense 10-course curriculum in all facets of hospital management expected to be on a par with the Hopkins Educational Centre Hospital Management Diploma.

During the five year tenure of the contract, Hopkins will also seek to get the Hinduja Hospital Management Institute accredited by the Hospital Administrative body in the United States.

Dr. Navin Shah, a former president of the American Association of Physicians from India (AAPI), the largest and most influential international medical group in the United States, said that under the terms of the contract, the Indian faculty would also be brought to the US for training at Hopkins.

Dr. Shah, a consultant to the Hinduja group of hospitals, said negotiations had begun nearly two years ago when Mr S P Hinduja, lamenting the dearth of qualified hospital management personnel in India, asked him to explore the possibility of a tie-in with a major US university or medical group to set up a management training institute in India.

Dr. Shah said, Mr Hinduja, whose foundation runs a private hospital in Bombay and hopes to set several more such hospitals across India, certainly had a vested interest in such an institute because it would necessarily mean the training of qualified hospital executives who could be part of his team.

"Now what is happening in all these major private hospitals," Dr Shah explained, "is that they are being run by retired military people, retired generals and IAS officers, and while they are good managers, they really are not qualified and trained hospital managers who would know all aspects of the hospital business".

Dr Shah said, "If you want to go into the 21st century and be on a part with the hospitals in the US and the West, you got to have people who can ensure quality and efficiency and also be able to control cost while at the same time not compromising patient care".

Mathematical Association Annual Lectures

"A Date with Mathematicians" was the title of a function organised by the Mathematical Association of India, Delhi Chapter, as part of their annual lecture programme and felicitation ceremony.

Professor M. M. Pant, Director of School of Computer and Information Sciences, Indira Gandhi National Open University (IGNOU), delivered the Professor J. N Mitra Memorial lecture on "Mathematics — The Engine of Information Age" in New Delhi recently. He stated that mathematics had a significant role to play in all technological advancements.

Prof. Pant said mathematics was not confined to the academia alone but was finding application in almost all branches of human endeavour including such diverse pursuits as cryptography on the one side and mundane engineering on the other end of the spectrum.

Fibre Optics and Optical Communications was the theme of the second lecture delivered by Professor Ajoy Ghatak of the Indian Institute of Technology, Delhi. Professor Ghatak outlined the utility of mathematics in this fast-developing branch of fibre optics and made out a strong case for support of mathematics from the industry. Delivering the Professor Ram Behari memorial lecture on "Density Estimation and Data Analysis," Prof. B. L. S. Prakash Rao said that large and complex volume of data were handled by computers and therefore the computer revolution had been of immense help to the process of density estimation and data analysis.

On this occasion the annual Distinguished Service Award of the Association was presented to Professor A. M. Vaidya, eminent number theorist. The programme was attended by over 200 college and university teachers in mathematics and allied areas from Delhi and other parts of the country

IGNOU Plans Virtual Classrooms

The Indira Gandhi National Open University (IGNOU) proposes to introduce "Virtual Classrooms" programme from January, 1998. Over 1,50,000 management students are expected to be benefited from the new programme. Hundreds of management institutes, training institutions and Non-Governmental Organisations (NGO) have approached the university for setting up "virtual classrooms". Selected organisations will be required to provide complete facilities for admission, organising tele-counselling sessions and examinations and will function as local resource centres of IGNOU. IGNOU will provide self-instructional course material, computer connectivity, electronic library access and data transfer and counselling support to the students through its tele-counselling system. The "virtual classrooms" programme will provide classroom like facilities to students all over the country and will enable them to ask questions on phone or fax (two-way audio) and get instant replies from the faculty at IGNOU's headquarters.

PG Diploma in Education Management

The Department of Education Management of the SNDT Women's University offers a one year 'Post Graduation Diploma in Education Management'. The course is designed to provide an understanding of basic management concepts and their application in an educational environment

The UGC has accredited this course equivalent to two Refresher Courses/Orientation programmes sponsored by UGC.

The course is of one year duration. It will be spread over forty weeks, approximately, of alternated contact-cum-self instructional phases. (Eight weeks of contact and thirtytwo weeks of self-instruction) It comprises three phases of contact sessions which are interspersed with three self-instructional phases.

Graduates from any discipline with experience in an administrative position are eligible. Women holding senior positions in educational institutions will be given preference.

Application forms and prospectus are available in the Dept. of Education Management against a payment of Rs. 20/- in cash. The last date for receipt of application forms is 1st July 1997. Further details may be had from Dr. Lena D'Souza/Ms. Bharathi Chawathe, Department of Education Management, SNDT Women's University, Mumbai - 400 020.

IIT-Delhi Plans MBA Courses

IIT Delhi proposes to start a Two-Year Master of Business Administration (MBA) programme in management systems and a Three-Year Part time MBA course in Technology Management from July 1997. The courses are open to engineering graduates as well as postgraduates in physical sciences, computer applications, operation research, commerce and economics. The courses are expected to bridge the demand-supply gap of high quality management education need to face the emerging corporate challenges.

JNU-SBI Sign MoU

The State Bank of India is reported to have signed a memorandum of understanding with the Jawaharlal Nehru University as part of its Research and Development Fund under Community Service Banking.

According to the MoU the bank will provide financial assistance to the tune of Rs 18.47 lakh which includes a one time grant of Rs 2 lakh to the university for carrying out research work in the field of "Forecasting Financial Variables in India".

The MoU was signed by SBI's Chief General Manager (Delhi Circle) Mr P.S. Mehrotra and JNU's Vice-Chancellor Prof Asis Dutta.

News from Agricultural Universities

Reading Varsity Students Visit Parmar Varsity

A group of nineteen inservice students from the University of Reading, UK, Department of Agricultural Extension and Rural Development, under the leadership of Prof John Northridge recently visited the Dr Y S Parmar University of Horticulture and Forestry, Solan. These students belonging to Kenya, Ethiopia, Tanzania, Botswana & Uganda, Zambia, Ghana, Malaysia, Spain and England were on a week-long study tour to rural area of Solan and Shimla districts. They interacted with the rural farmers, farms women concerning their problems and their socio-economic status to know about the rural development in hill state.

Addressing the students, Prof. L R Verma, Vice Chancellor, briefed the various on-going activities of the University. When asked about the use of pesticides in crop production Prof Verma said that the university was working on integrated pest management, biological control to reduce the use of pesticide for healthy eco-system. About future strategies of the university he said that their major focus was on income generation through diversification, value addition with post harvest management and marketing research for the produce.

Dr. P. K. Khosla, Director of Extension Education said that agro-forestry and social forestry system introduced in the state was meeting the requirements of the rural people which was a healthy sign for the conservation of reserve forests.

News from UGC

Countrywide Classroom Programme

Between 8th and 14th May, 1997 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

8.5.97

"Understanding Cast Iron"
"The Medium is The Message"
"Esperanto : An International Language"

10.5.97

"Transformation Geometry"
"Population Policy and Issues"
"Glorious Past—Uncertain Future"

11.5.97

"Round Table-I"
"The Story of Indian Painting-II : Wall Painting"
"The Gasping"

13.5.97

"New Horizons"
"A Talk With Dr. Kasturirangan"
"Thalassaemia: A Genetic Blood Disorder"

IInd Transmission

1.00 p.m. to 2.00 p.m.

8.5.97

"New Horizons"
"Human Genetics-II:Banding Patterns"
"Why not in Your City?"

9.5.97

"Algebric Structure-I: Theory of Sets"
"Non Violence : Gandhi's View"
"Plants in Our Neighbourhood-III"

10.5.97

"Round Table-I"
"The Story of Indian Painting-XI: The Progressive Cine Arts"

11.5.97

No Telecast

12.5.97

"Study of Potential Energy Diagrams-IV"
"International Business Curriculum-II"
"Biofarming ..in Dialogue with Nature"

13.5.97

"Images and Graphic Animation in Chemistry
"Ways of Thinking-SEP-VI: Making Space"
"Biology of Pain"

14.5.97

"Non-conventional Energy Sources-I: Solar Energy"
"Exploring Eden: The Quiet Defence"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

9.5.97

"अनुमान और प्रमाण गणित में - 1"

12.5.97

"औद्योगिक क्षेत्र में मानवीय संबंध – 5"
"टिश्यू कल्चर"

14.5.97

"सगीत ताल – 2"
"बुनियादी शिक्षा"

News from Abroad

Workshop on Distance Learning

The International Institute of Educational Planning (IIEP) and Southeast Asian Ministers of Education Organisation Regional Center for Education Innovation and Technology (SEAMEO INNOTECH) propose to organise a Workshop on "Planning, Design and Management of Distance Learning" on 9-13 June 1997 at Manila.

The five-day workshop has been designed to give educational administrators, policy makers and managers an overview of the skills and techniques essential for the planning, design and management of distance learning systems and an insight into the potential and limitations of these systems. It has been designed to address the needs of senior civil servants, chief executive officers, senior administrators of large institutions, and those likely to take charge of departments or institutions where distance learning is under consideration as an element of the educational delivery system.

The workshop will focus on the development of skills that relate to such areas as curriculum design, product delivery and quality control, while at the same time insights will be developed on questions relating to system design and optimization. Interactive workshop techniques and group seminars will be used to explore the experiences of top administrators and academics who have applied the concepts of distance learning to a wide variety of educational and social environments at different educational levels. This format will allow participants both to learn something of the formal structure of distance-learning institutions and to question the validity of the structural models now in use, so being able to make policy judgements.

The workshop will cover a wide range of course topics, structured around four respectives: the fundamentals of distance education; systems structure; the costing of projects; and pointers for success or failure. These topics will include :

- *Policy issues in* distance education development.
- *Planning*: strategic planning for distance education; needs assessment and market analysis; media choices (including new information technologies); institutional framework; budgeting and funding.
- *Design*: curriculum development and the market (product, price, place, promotion); curriculum design and evaluation of learning; quality assurance and quality control; critical success factors.
- *Delivery*: development, production and distribution of materials and services.
- *Management, system evaluation and control*: organizing for success; management structures; staff development; service management (student services and customer care).
- *Cost-structure*, cost-efficiency, cost-effectiveness, cost-benefit.

Further details may be had from Dr. Demetrio Monis, Program Director for Training, SEAMEO INNOTECH, P.O.Box 207, U.P., Diliman, Quezon City, 1101 Philippines.

राष्ट्रीय अध्यापक शिक्षा परिषद्

National Council for Teacher Education

15, I.P. Estate, Mahatma Gandhi Marg, New Delhi - 110 002.

PUBLIC NOTICE

(For Attention of Teacher Education Institutions)

Under Section 14(1) of the National Council for Teacher Education (NCTE) Act, 1993 (No. 73 of 1993) every institution offering or intending to offer a course of training in teacher education on or after the appointed day i.e. August 17, 1995 has to make an application to the concerned Regional Committees of the NCTE for recognition in the prescribed format and manner.

The term 'Institution' has been defined inthe NCTE as an institution which offers a course or training in teacher education. As such all institutions offering teacher education courses of any kind or level, including the University Departments of Education running teacher education courses are covered under this definition.

In the last Public Notice that appeared in various newspapers in February end or early March 1997, all such institutions were advised to submit their applications latest by **April 1, 1997** to concerned Regional Committee of the NCTE. A number of institutions who have not been able to apply for recognition for various reasons have requested for extension of time limit for submission of their applications for recognition to the concerned Regional Committee.

The matter has been considered and keeping in view the difficulties experienced by several institutions, it has been decided to extend the last date for submission of applications to **May 15, 1997**. All such institutions who have not submitted their applications for recognition to the concerned Regional Committee are hereby advised to do so urgently within the extended time limit. no request for furthyer extension of time will be considered. Addresses of the Regioal Committees are given below:

Address	**States/UTs**
1. The Regional Director, Eastern Regional Committee (NCTE), N-2/82, IRC Village Nayapalli, **Bhubaneshwar - 751 015**. Ph 0674-418 349.	Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, West-Bengal, Tripura, A&N Islands.
2. The Regional Director, Western Regional Committee (NCTE), Manas Bhawan, Shyamla Hills, **Bhopal - 462 002**. Ph. 0755-530 912.	Goa, Gujarat, Madhya Pradesh, Maharashtra, D&N Haveli, Daman & Diu.
3. The Regional Director, Northern Regional Committee (NCTE), A-46, Shanti Path, Tilak Nagar, **Jaipur - 302 004**, Ph. 0141-620 116.	Haryana, Himachal Pradesh, Punjab, Rajasthan, uttar Pradesh, Chandigarh, Delhi.
4. The Regional Director, Southern Regional Committee (NCTE), 66, 6th Main, 4th Block, Rajaji **Nagar, Bangalore - 560 010**. Ph. 080-330 6590.	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Laksha-Dweep, Pondicherry.

Member of Secretary

davp 97/16

BOOK REVIEW

Professionalism & Teachers

D. Raja Ganesan*

T.N. Dhar, Ed. Professional Status of Teachers. New Delhi, National Council for Teacher Education, 1996. Pp.211. Price not stated.

This document is the outcome of an exercise undertaken by the National Council for Teacher Education (NCTE) towards the fulfilment of its mandate, namely, development of the teacher education system throughout the country and maintenance of norms and standards — a seminar at Bhopal in 1995.

Amrik Singh's introductory paper brings home the fact that despite its massive size — about 2 million across all levels of education — the teaching profession in India is lacking a distinct identity. It is way behind many other professions both in the conscientious pursuit of excellence and in developing and adopting a code of ethics. The author has also listed the factors behind this lag : He blames the politician for this state of affairs and indicates problematic areas like transfer, promotion, admission, etc. He wants priority to developing and adopting a code of ethics. He wants teachers to take pride in their profession and to refuse to play the politicians' game He believes excellence would then follow on its own.

S.N. Saraf has discussed the nature, concept and potentialities of the professional development of teachers. Technological advances and the demands of the oncoming 21st century on the school, and *ipso facto* on teachers, indicate for him that educational technology and value education must receive attention in teacher education. He describes these twin thrust areas as professionalization and humanization.

Trilok Dhar has listed the factors that affect professionalism and professional accountability among teachers in India. He has done well to point out that the teacher cannot be fully faulted to his/her students' failure nor claim the entire credit for their achievement. Dilution of standards in professional preparation, the relatively short period given for such preparation vis-a-vis other professionals like engineers and doctors, laxity in giving affiliation to teacher education institutions due to political pressures, and the low attractiveness of the profession are highlighted by Dhar. Low social prestige, poor work environment and lack of freedom — both professional and civic — are also listed. Commitment to the profession and professional autonomy — on the lines of the medical profession — are suggested as solutions.

In his paper on "Ideal Teachers' Association", C.L. Kundu has first identified four needs that have led teacher throughout the world to organize themselves into an association : philosophic or professional, economic, ethical and the need for public recognition and acceptance. He has explained how dedicated, active, knowledgeable individual members representing a unified profession can help meet these needs He has also given nine distinct guidelines for such an organization to carry out appropriate programs. Under the eighth one he has given sub-areas for service to its own members. He sums up his presentation as follows: "an ideal association would meet all the needs of teachers, be built on the strongest possible representative, individual membership and offer a wide variety of activities for its members".

G. Chaurasia has dwelt on the role of teacher organizations in the professional development of teachers He has highlighted the responsibility of the profession vis-a-vis the right to education as a fundamental right He has also brought together the recommendations of the Kothari Commission (1966), the New Education Policy (1986), NCERT's Draft Code of Ethics for Teachers (1988), NCTE's mandate, the National Commission on Teachers and the WCOTP's study on the Status of Teachers in India (1967). He has offered suggestions like removal of salary disparities among identical cadres of teachers, prescribing and enforcing (a uniform) minimum qualification for entry into the profession and a (permanent) negotiating machinery at the level of each state.

S.C. Behar has made a semantic search for teachers' (professional) identity. His discussion on the distinction between professionalism and unionism and the steps he has suggested for making teaching more of a profession deserve mention.

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* *Prof. & Head, Department of Education, University of Madras, Chennai-600 005*

Krishnaji has discussed the responsibilities and rights of teachers. R.P.Singh has dealt with "Teachers Organizations and Professional Development of Teachers". His focus on freedom and responsibility and on innovation is pertinent. N.K. Uberoi has done well to point out the gap between Teacher Education at college and university levels. He has suggested a strategy for bridging the same. P.R Nayar's added focus on the rights and responsibilities of teacher educators is pertinent R.P. Dhokalia has explored what the teaching profession can contribute to quality of life in a global, technological society He has emphasized the spiritual value of *dharma* as indispensable for sustaining the quality of life. S N.Singh's historical perspective on the teaching profession in India — especially his treatment of the past — is a welcome one.

Suryanath Singh has given a bird's eye view of the teaching profession from a historical perspective. His listing of the attitudes of a teacher in the past is enlightening. His portrait of the teacher during the British period is clear He is disappointed with what has been done in independent India towards improving the profession. He decries the overemphasis on analytical methodologies.

C. Singh has looked at what teacher education — both in-service and pre-service — can do for the professional development of teachers. He could have given attention to prospective professional socialization during the pre-service preparatory phase which is very weak compared to that in law and medicine.

Narendra Vaidya has suggested certain models : it is not clear as to what he means by "Human Resources and 'regret" issues (p. 197, diagram 4).

J.S. Rajput's concluding paper is sharply focused on the emerging concerns, the need for a responsive professional corps of teachers, *professional rather than* pecuniary rights (though the importance of the latter is duly acknowledged) and the illustrative content of such rights and responsibilities. Similarly he has highlighted the contents of professional autonomy for teachers. He has also referred to radical innovations like the Zero Lecture Method initiated by a bureaucrat in M.P. who was deeply interested in education. Then he goes on to the levels of professional organizations of teachers Rajput has rightly stressed rights and responsibilities, and autonomy and accountability of teachers. He has also indicated what positive role professional organizations could play. He has concluded with an inventory of the positive potentialities for the future. The inventory has concrete suggestions which can provide leads for transformative action. His concluding observation restores the primacy of our teaching profession in history and society: Yes, "After all, all other professionals are the products of this profession".

A preliminary colloquium of the participants a few months before their preparation and presentation of their papers would have helped avoid overlaps, and repetitions of ideas and suggestions.

RASHTRIYA SANSKRIT VIDYAPEETHA, TIRUPATI-517 507
(Deemed University)

INSTITUTE OF ADVANCED STUDIES IN EDUCATION
(Sponsored by MHRD, Govt. of India, Phase-I)

Applications are invited for the following temporary Teaching posts in the Institute of Advanced Studies in Education (Project Sanctioned to the department of Pedogogy)

I. S.No.	Post, No. & Scale	Specialisation
1	PROFESSOR (One) Rs 4500-150-5700-200-7300	Foundations
2	READERS (Two) Rs. 3700-125-4950-150-5700	Inservice and Extension Services (1) Methods of Teaching Sanskrit (1)
3	LECTURERS (Three) Rs 2200-75-2800-100-4000	Inservice and Extension Services (2) Methods of Teaching Hindi (1)

II. a) Ability to teach through the medium of Sanskrit for all above posts is essential
b) Experience in Elementary/Secondary/Higher Secondary Schools/Teacher Training Institute is preferable.

III. **Job Description** : As per the details, to be supplied with application form

IV. **General Information**

(1) All the posts are TEMPORARY and will be for a period of one year in the first instance, extendable upto 3 years year by year but may be continued. (2) The prescribed applications form along with qualifications and other details can be had from the REGISTRAR by sending a self-addressed stamped (Rs. 5-00) envelope of 9"x4" along with a Demand Draft drawn in favour of Registrar (Rs 50/- for Professor & Reader and Rs. 30/- for Lecturer posts) clearly mentioning in the requisition letter, the name of the post for which the application is sought. The SC/ST candidates are required to pay only half of the amount prescribed duly enclosing their CASTE certificate along with the requisition for application (3) **Last date for receipt of the duly filled in applications is 15.5.97.**

Tirupati
Dt. 7 4.97

REGISTRAR

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

SOCIAL SCIENCES

Library & Information Science

1. Patel, Ananta Kumar. **Public library system in Orissa : A developmental plan.** (Dr R K Rout). Department of Library and Information Science, Sambalpur University, Jyoti Vihar, Burla.

2. Ramakrishne Gowda, K C. **Nature of public library services in relation to users and their needs : A study of public libraries in Chikmagalur District, Karnataka.** (Prof H A Khan). Department of Library and Information Science, University of Mysore, Mysore

Journalism

1. Halliken, Gonibasaveswara Dyamappa. **Public opinion, communal harmony and the press.** (Dr A S Balasubramanya). *Department of Mass Communication and Journalism, Karnatak* University, Dharwad.

Psychology

1. Chugh, Monika. **Stressful life events perceived stress and somatic problems among the recently retired army personnel in Patiala District.** (Dr Manjit Singh). Department of Psychology, Punjabi University, Patiala.

2. Fatma, Tahseen. **Need pattern of Indian immigrants residing in other countries.** (Dr Chhaya). Department of Psychology, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

3. Mishra, Sangeeta. **Climate supportive N' achievement and self concept in children as a function of type of institutions environment, deprivation and greed.** (Dr Aradhana Shukla). Department of Psychology, Shri Shahu Ji Maharaj Kanpur University, Kanpur

4. Sharma, Mamta. **Musicality, extraversion and neuroticism in mental relaxation under the influence of music and biofeedback.** (Dr Satnam Singh Khumer). Department of Psychology, Punjabi University, Patiala

5. Shrivastava, Pramila. **A comparative study of stress and coping styles among type A and type B teachers.** (D P K Tiwari). Department of Psychology, Guru Ghasidas University, Bilaspur.

6 Srikhruedong, Siriwat. **A study of certain personality characteristics of Buddhist Monks in Thailand.** (Dr D S *Jaabandhu). Department of Psychology, Dr Babasaheb Ambedkar* Marathwada University, Aurangabad.

Sociology

1. Boaz, Arvind Anil. **Socio-economic upliftment of tribals through forestry in Madhya Pradesh with particular reference to Dhar District.** (Dr W S K Philips). Department of Sociology, Devi Ahilya Vishwavidyalaya, Indore.

2. Borah, Aswhini Kumar. **Impact of modern technology among the Mishings and the Karbis of Assam : A study based on sociology of Science.** (Prof D Doley). Department of Sociology, Dibrugarh University, Dibrugarh.

3. Gupta, Pushpa Devi. **Bharatiya rajniti mein mahilayon kee rajnitik jagrukta evam rajnitik sahbhagita ka *samajshastriya adhyayan.*** *(Dr Kuntesh Gupta). Department of* Sociology, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

4. Jagadeeshwar Rao, V. **Rural housing programmes : Sociological ramifications, a select study of Nellore District, Andhra Pradesh.** (Dr N Vijaya). Department of Sociology, Osmania University, Hyderabad.

5. Khan, Aisha. **A sociological study of juvenile delinquents and their rehabilitation in Madhya Pradesh.** (Dr S Pothan). Department of Sociology, Devi Ahilya Vishwavidyalaya, Indore.

6. Lakshmi, S. **Pattern of urban development in a district head-quarters city.** (Dr V Gomatinayagam). Department of Sociology, Annamalai University, Annamalainagar

7. Mishra, Godawari **Nagariya parivaron mein pati patni sambandhon ka samajshastriya adhyayan : Sitapur Nagar ke vishesh sandarbh mein.** (Dr Kuntesh Gupta). Department of Sociology, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

8. Mishra, Sidh Narain. ***The socio-cultural study of Koles*** **Tribe of Patha Area in Banda District.** (Dr V N Singh). Department of Sociology, Shri Shahu Ji Maharaj Kanpur University, Kanpur'.

9. Mohd Mazammal Hussain. **Perceptions and aspirations of Rajputs : A sociological study of Rajuri District, J & K.** (Dr M B Mathur) Department of Sociology, Aligarh Muslim University, Aligarh.

10. Nigam, Shashi. **Kanpur mahavidyalayon kee mahila shikshkon mein parivartit samajik mulya ka ek samajshastriya adhyayan.** (Dr G D Makija). Department of Sociology, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

11. Punia, Mehar Singh. **Development, displacement and rehabilitation : The case study of Singrauli.** (Prof K S Sangwan). Department of Sociology, *Maharshi Dayanand University*, Rohtak.

12. Sandhu, Ranjit Kaur. **Indore Nagar mein basi anusuchit Bheel janjati kee samasyayon ka adhyayan, Musakheri Indore ke Bheelon ke sandarbh mein.** (Dr Uma Vajpayee). Department of Sociology, Devi Ahilya Vishwavidyalaya, Indore.

13. Shrivastava, Vijay Lakshmi. **A study of the status of working women and their family adjustment.** (Dr N N Awasthi). Department of Health Education and Family Welfare, Bundelkhand University, Jhansi.

14. Tombat, Nishta. **Tristao De Braganza-Cunha, 1891 to 1953 and the rise of nationalist consciousness in Goa.** (Dr W R Da Silva). Department of Sociology, Goa University, Goa.

15. Varadpande, Urmila Kusumakar. **Kutumb kalyan karyakram janiva va abhivritti : Ek samajshastriya adhyayan.** (Dr Prakash Bolde). Department of Sociology, Nagpur University, Nagpur.

Political Science

1. Aiyar, Vidya Shankar. **Political change in the U S S R, 1985-1991.** (Prof Zafar Imam). Centre for Soviet and East European Studies, Jawaharlal Nehru University, New Delhi.

2. Anadkat, Nalin Karshandas. **Global order and peace : A study of the perspectives of Gandhi, Nehru and Lohia.** Department of Political Science, Maharaja Sayajirao University of Baroda, Vadodara.

3. Bajpai, Ayodhya Prasad. **Bhimrao Ambedkar ka rajnitik darshan.** (Dr R B Verma) Department of Political Science, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

4. Bhagwan Ram. **Mahapandit Rahul Sanskrityayan ka rajnitik matadarsha.** (Dr Braj Kumar Pandey). Department of Political Science, B R Ambedkar Bihar University, Muzaffarpur.

5. Buragohain, Nirola. **Ethnic assertions in Assam : A study of the Ahoms.** (Prof Girin Phukan). Department of Political Science, Dibrugarh University, Dibrugarh.

6. Chauhan, Mamta. **Uttar Pradesh kee Terahaveen Vidhan Sabha, 1991 ka nirvachan tatha matdan vyavahar : Farrukhabad Janpad ke vishesh sandarbh mein.** (Dr B P Gautam) Department of Political Science, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

7. Chowdhury, Nita. **A study of the attitude of the U S Congress towards Indian security environment, from 1962 to 1971 A D.** (Dr R K Gupta). Department of Political Science, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

8. Deo, Alka R. **Bhartiya rajniti aur rajnitik vyavastha mein Anuchhed 356 kee bhoomika.** (Dr R N Mittra) Department of Political Science, Pt Ravishankar Shukla University, Raipur.

9. Dhruvanshi, Amrit. **Bhartiya Uchchatam Nyayalaya aur nyayik punravlokan : Ek vivechan.** (Dr Umashankar Shukla). Department of Political Science, Guru Ghasidas University, Bilaspur.

10. Fernandes, Aureliano Freddy. **Cabinet Government in Goa since liberation, 1961-1993.** (Dr A H Doctor). Department of Political Science, Goa University, Goa.

11. Ghatak, Sandip Kumar. **Political participation of the Santhals of Birbhum : Its nature and extent.** (Dr Bholanath Banerjee). Department of Sociology, University of Burdwan, Burdwan.

12. Khan, Mustak Ahmad. **Role of neighbouring states in India's security with special reference to Bhutan and Nepal.** (Dr Iqbal Khanam). Department of Political Science, Aligarh Muslim University, Aligarh.

13. Kumar, Ram Briksha. **The role of nuclear weapons in the emerging world order.** (Prof T T Poulose). Centre for International Politics, Organisation and Disarmament, Jawaharlal Nehru University, New Delhi.

14. Rahman, Khalilur. **Strategy for Health for All by the Year 2000 in Bangladesh : Role of WHO.** (Prof R C Sharma). Centre for International Politics, Organisation and Disarmament, Jawaharlal Nehru University, New Delhi.

15. Sangeeta. **Uttar Pradesh mein rajnitik sahbhagita navin Lok Sabha, 1989 ke sandarbh mein ek adhyayan.** (Dr B P Gautam). Department of Political Science, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

16. Shrivastava, Arvind. **Bharat Shri Lanka sambandh 1981 ke uprant.** (Dr S S Bagga). Department of Political Science, Devi Ahilya Vishwavidyalaya, Indore.

17. Singh, Ram Sanjiwan. **Concept of socialism in the Constitution of India.** (Dr Braj Kumar Pandey). Department of Political Science, B R Ambedkar Bihar University, Muzaffarpur.

18. Tripathi, Arti. **Rajya ke niti nirdeshak sidhanton ka Bihar mein karyanvayan : Bhojpur Jila ka vishesh adhyayan.** Department of Political Science, Veer Kunwar Singh University, Ara.

Economics

1. Arunachalam, P. **India's engineering exports growth concentration and diversification.** (Dr D Rajasenan). Department of Applied Economics, Cochin University of Science and Technology, Kochi.

2. Bansal, Sanjive Kumar. **A study of comparasion of different modes of presentation of agriculture broadcast of AIR and their impact on knowledge and adoption of improved agricultural practices in Tarai Area, District Nainital.** (Dr V B Singh). Department of Agricultural Extension, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

3. Clara, M D. **Returns on investment in female higher education in Kerala.** (Dr Lakshmy Devi K R). Department of Economics, University of Calicut, Calicut.

4. Das, Purba. **Trade and transit problem of Asian Land Locked States : A case study of Nepal.** (Prof R C Sharma). Centre for International Politics, Organisation and Disarmament, Jawaharlal Nehru University, New Delhi.

5. Dash, Somesh Dutta. **Impact of financing of agriculture by commercial banks : A case study of Sambalpur District.** (Dr Dilip Kumar Panda). Department of Economics, Sambalpur University, Jyoti Vihar, Burla.

6. Dikshit, Niketa Singh. **A study of rehabilitation of retired army officers in Madhya Pradesh, 1985-1990.** (Dr Shirin Mahalati). Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

7. Gana, Pratap Singh. **Krishi kshetra mein istri shram ka yogdan evam samasyayen : Uttar Pradesh ke parvartti anchal ka ek kshetriya adhyayan.** (Dr A K Singh). Department of

Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

8. Harvinder Kaur. **Socio-economic determinants of fertility : A case study of Patiala City.** (Dr Upinderjit Kaur). Department of Economics, Punjabi University, Patiala.

9. Jain, Narendra Kumar. **Food grain price strategy in Indian planning.** (Dr S P Bhatnagar). Department of Economics, Bundelkhand University, Jhansi.

10. Karunakar Reddy, R. **Water resource management for irrigation : A case study of Cuddapah District.** (Prof C Venkata Reddy). Department of Economics, Sri Krishnadevaraya University, Anantapur.

11. Koshti, Narendra Kumar. **Bharat mein krishi keematon ke nirdharak tattvon ka vishleshanatmak adhyayan.** (Dr A D N Bajpai). Department of Economics, Rani Durgavati Vishwavidyalaya, Jabalpur.

12. Kulkarni, Shashikala. **Madhya Pradesh ke dakshin pashchim adivasi kshetra mein paramparagat evam hastkala udyog ka arthik vishleshan : Ek adhyayan.** (Dr Nirupama Nagar). Department of Economics, Devi Ahilya Vishwavidyalaya, Indore.

13. Lakra, Jit Singh. **Family welfare and MCH programme in rural Haryana : A case study of Rohtak District.** (Prof S B Dahiya). Department of Economics, Maharshi Dayanand University, Rohtak.

14. Mohinder Singh. **An economic analysis of production and marketing of seeds in Punjab.** (Prof Janak Raj Gupta and Prof S S Grewal). Department of Economics, Punjabi University, Patiala.

15. Nagendra Singh. **Resource use efficency in agriculture in Ghazipur District of Uttar Pradesh.** (Dr J N Singh). Department of Agricultural Economics, Narendra Deva University of Agriculture and Technology, Narendranagar, Faizabad.

16. Prasanna Kumar, K N. **Dynamics of planning : A case study of Indian planning.** (Prof Abdul Aziz). Department of Economics, Kuvempu University, Shimoga.

17. Prashant Kumar. **The working of Finance Commissions in India with special reference to the State of Bihar, 1952-85.** (Dr R P Verma). Department of Economics, B R Ambedkar Bihar University, Muzaffarpur.

18. Prem Kumar. **Bharat varsh mein mudra purti sifiti kee pravrattiyan tatha maudrik niti ka ek vishleshan, varsh 1970 se 1990 kee samyavadhi mein.** (Dr R S Tripathi). Department of Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

19. Raghavan, Pyarelal. **Dynamics of industrial cooperatives : A study of traditional industries in Kerala.** (Dr K K Subrahmanian and Dr T M Thomas Isaac). Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Delhi.

20. Ramalingeswara Murty, M. **Joint sector enterprises in India : Rationale growth and performance.** (Prof V Lakshmana Rao). Department of Economics, Andhra University, Waltair.

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24. Sandhya Rani, G. **Prospects of sericulture development : A study in Andhra Pradesh and Karnataka States.** (Prof N Narayana). Department of Economics, Sri Krishnadevaraya University, Anantapur.

25. Sen, Soma. **An econometric analysis of demand for public transportation in Shillong.** (Dr K Bez). Department of Economics, North Eastern Hill University, Shillong.

26. Sharma, Ved Prakash. **A study on market arrivals and the price of major food grain in Kanpur and Allahabad town mandies of Uttar Pradesh.** (Dr S L Gupta). Department of Agricultural Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

27. Singh, Krishna Pratap. **A study of resource use and productivity on different size of farms in District Jaunpur, U P.** (Dr D S Singh). Department of Agricultural Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

28. Sivakumaresan, R. **An analysis of public expenditure on social and community services in Indian states, 1974-75 to 1989-90.** (Dr A V Rengachari). Department of Economics, Annamalai University, Annamalainagar.

29. Sudhakar Reddy, B. **Regional variations in agricultural development of Andhra Pradesh.** (Prof M Narasimhlu). Department of Economics, Osmania University, Hyderabad.

30. Tiwari, Avanish Kumar. **Income, saving and investment of Integrated Rural Development Programme beneficiaries in Etawah District, U P.** (Dr B P Sharma). Department of Agricultural Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

31. Tripathi, Poornima. **Problems of tax evasion and tax avoidance and its impact on Indian economy with special reference to income-tax.** (Dr Saroj Taneja). Department of Economics, Shri Shahu Ji Maharaj Kanpur University, Kanpur.

32. Venkatadri, S. **Factors influencing adoption of dairy technologies under I R D P : A socio-economic study in Ranga Reddy District of Andhra Pradesh.** (Dr N V Narayana). Department of Rural Development, Sri Krishnadevaraya University, Anantapur.

33. Venkateshappa, K S. **The performance of indirect taxes under planning in India.** (Dr D T Nanje Gowda). Centre for Rural Development Studies, Bangalore University, Bangalore.

34. Zafar Mahmood Alam. **Economic impact of rural credit at the household level : A study of Vadodara District.** Department of Economics, Maharaja Sayajirao University of Baroda, Vadodara.

Law

1. Joshi, Prakash Chandra. **Imposition of President's rule in states : Constitutional prescriptions and state practice in India.** (Prof R C Vyas). Department of Law, Devi Ahilya Vishwavidyalaya, Indore.

2. Subrahmanyam, A. **Federalism in India : A politico legal study.** (Prof A Lakshminath). Department of Law, Andhra University, Waltair

Public Administration

1 Anoop Singh. **Policy making at the state leval with special reference to Haryana.** (Dr Sarla Malik) Department of Public Administration, Maharshi Dayanand University, Rohtak.

2 Ravinder Singh **Police administration : A case study of Rohtak District.** (Dr Sarla Malik) Department of Public Administration, Maharshi Dayanand University, Rohtak

3 Sansar Singh **Finance Commission and centre-state financial relations in India** (Dr S S Tiwana) Department of Public Administration Punjabi University. Patiala

Military Studies

1 Chahal, Indra Jeet Singh. **Sikhon kee uchch shaurya parampra ka rakha vyavharaik adhyayan.** (Dr Sita Ram Shukla) Department of Military Studies, Shri Shahu Ji Maharaj Kanpur University Kanpur

2 Dogra, B D **Organisation for higher direction of war in India** (Dr O P Sharma). Department of Military Studies, Devi Ahilya Vishwavidyalaya, Indore.

3 Khan, Nasir **Pakistan's security policy upto 1965.** (Dr F R Khan). Department of Military Studies, Devi Ahilya Vishwavidyalaya, Indore

4 Pandey, Surendra Kumar. **Haidar Ali ke sainya netritva ka vishleshanatmak adhyayan.** (Dr R K Gupta) Department of Military Studies Shri Shahu Ji Maharaj Kanpur University, Kanpur

5 Singh, Raj Pal **Bharatiya sainya paddhati mein ashvabal se tankdal mein parivartit kavyachit cor kee raksha vaigyanaik bhumika.** (Dr Sita Ram Shukla) Department of Military Studies, Shri Shahu Ji Maharaj Kanpur University Kanpur

6 Tomar, Surendra Pratap Singh **Bharatiya sainya itihas evam youdh kala mein Sikhon ka yogdan.** (Dr S K S Sengar). Department of Military Studies, Shri Shahu Ji Maharaj Kanpur University, Kanpur

Education

1. Baruah, Dharma Prabha **A study of role conflict and its correlation with job satisfaction of secondary school teachers : A comparative study in Dibrugarh District, Assam** (Dr L N Konwar). Department of Education, Dibrugarh University, Dibrugarh

2. Desai, Bharatkumar Sahyabhai. **Gujarati language teaching through play : An exploration.** (Dr Ummedsingh). Department of Education, South Gujarat University, Surat.

3. Gowri, T S. **Assessment pattern in selected colleges/universities in Tamil Nadu.** (Dr M Chandramani). Department of Extension Education, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore

4 Gurinderjit Kaur. **A study of population awareness among rural adults of advanced and backward villages in relation to their age, sex, educational status and family related variables.** (Dr P L Gupta). Department of Education, Punjabi University, Patiala.

5 Harshvardhan. **Grameen evam shahri shikshakon kee abhivritti ka adhyayan : Jansankhya shiksha ke pariprekshya mein.** (Dr J L Verma) Department of Education, Bundelkhand University, Jhansi

6 Indira, B **An investigation into teacher effectiveness in relation to work orientation and stress.** (Prof R Rama). Department of Education, Andhra University, Waltair.

7. Joshi, Chandrakant Lalluram **An investigation into the impact of syntactic complexity of the text-books of English of grades XI and XII of the state of Gujarat upon the puplil's reading comprehension** (Dr A V Patel) Department of Education, Sardar Patel University, Vallabh Vidyanagar

8. Kamalam, Maria **Capacity building of the teachers in educating the mildly mentally retarded primary school children.** (Dr N Jayamuthu) Department of Human Development, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

9 Kanchan Bala **Distance education programmes at college and university levels in Jammu Region : An evaluative study** Department of Education, Himachal Pradesh University, Shimla

10 Karandikar, Chandrashekhar Mahadev. **Evolving a video-insturctional package to teach balanced diet to the students of standard VII and studying its effectiveness in terms of the students achievement.** Department of Education, Maharaja Sayajirao University of Baroda, Vadodara.

11. Mishra, Kunj Bihari. **Bilaspur Saikshik Sambhag mein aupcharikettar shiksha yojana ke kriyanvayan : Pragati evam prabhavotpadakta ka sameekshatmak adhyayan.** (Dr R D Singh) Department of Education, Guru Ghasidas University, Bilaspur.

12. Navdeep Kaur. **Nutritional status of female players : As studied from blood.** (Dr M S Sohal and Dr J L Bhanot). Department of Sports Sciences, Punjabi University, Patiala.

13 Paliwal, Radheyshyam. **Janpad Jalon ke anusuchit jati tatha swarna jati ke chhatron per arthik evam samajik karanon ka atma pratyaya per padne wale prabhav ka**

adhyayan. (Dr Satish Chandra Sharma). Department of Education, Bundelkhand University, Jhansi.

14. Patel, Shivabhai Magandas. **A study of educational implications of the Axiology of Jainism.** (Dr Maheshchandra K Yagnik). Department of Education, Sardar Patel University, Vallabh Vidyanagar.

15. Porwal, Umakant. **Bundelkhand sambhag mein anusuchit jati ke kishor varg vidyarthiyon kee abhivritti ka shaikshik nishpatti, buddhi smritti tatha akanksha star se sambandh : Ek adhyayan.** (Dr V P Agrawal). Department of Education, Bundelkhand University, Jhansi.

16. Prahlad, Mukta. **Self direction and the distance learner : Implications for learner training.** (Prof V D Singh). Department of English, Central Institute of English and Foreign Languages, Hyderabad.

17. Prajapat, Mulshankar Bhulabhai. **A study of the effect of programmes developing awareness towards environment among the pupils of Std-IV.** (Shri C K Patel). Department of Education, Sardar Patel University, Vallabh Vidyanagar.

18. Premavathy Vijayan. **Comparison of concept development of disabled children and non-disabled children in Tamil Nadu.** (Dr M N G Mani). Department of Education, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

19. Rani, S D. **A study of problems of Science education and attitude of students towards Science in high schools of East Khasi Hills District, Meghalaya.** (Dr M A Sudhir). Department of Education, North Eastern Hill University, Shillong.

20. Saroja, N. **A study of self-concept and achievement motivation of female adults towards literacy.** (Prof R Krishna Rao). Department of Education, Osmania University, Hyderabad.

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22. Singh, Khangjrakpam Ibohandi. **A critical study of the development of primary education in the North Eastern Region of India with special reference to Manipur Education.** (Dr L Leiren Singh). Department of Education, Manipur University, Imphal.

23. Soman, E. **Development of motor abilities of trained and untrained boys of Kerala.** (Dr M S Sohal). Department of Sports Science, Punjabi University, Patiala.

24. Thilagavathy, T. **A study of the academic achievement of adolescents in relation to their cognitive style, locus of control, self-esteemand mental health.** (Dr M Andal). Department of Education, Annamalai University, Annamalainagar.

25. Uma Devi. **Effectiveness of a remedial programme on improving reading comprehension skills among dyslexic children.** (Dr H V Shivashankara). Department of Education, Kuvempu University, Shimoga.

26. Vankar, Ishwarbhai Naranbhai. **An investigation into the proficiency in the subject of Gujarati of the secondary school teacher.** (Dr A S Joshi). Department of Education, Sardar Patel University, Vallabh Vidyanagar.

Commerce

1. Anjaneyulu, D. **Performance of the Andhra Pradesh State Road Transport Corporation : A comparative study with other selected corporations.** (Dr B Phaniswara Raju). Department of Commerce, Sri Krishnadevaraya University, Anantapur.

2. Anjaneyulu, K. **Human resource accounting in selected central public enterprises of India.** (Dr R Sudarshan). Department of Commerce, Kakatiya University, Warangal.

3. Basu, Pankaj Kumar. **Foreign trade policy in India since the plan period, 1951-1985.** (Dr Biswanath Ghosh). Department of Commerce, University of Burdwan, Burdwan.

4. Chandra Shekher. **Accounting information and the security market efficiency hypothesis.** (Dr B S Bhatia). Department of Commerce, Punjabi University, Patiala.

5. Goel, Vijay Kumar. **Madhya Pradesh mein kattha udyog ka arthik prabhav.** (Dr R C Saxena). Department of Commerce, Guru Ghasidas University, Bilaspur.

6. Goswami, Apurba. **The green revolution and its impact on the standard of living of the agriculturists of Burdwan District.** (Dr Biswanath Ghosh). Department of Commerce, University of Burdwan, Burdwan.

7. Gupta, Avinash Chandra. **Etawah Jile ke arthik vikas mein laghu evam kutir udyogon ka yogdan.** (Dr R C Katiyar). *Department of Commerce, Shri Shahu Ji Maharaj Kanpur University, Kanpur.*

8. Mannan, Syed Abdul. **A study of security prices in India, 1994-95.** (Dr N G Bapat). Department of Commerce, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

9. Parminder Singh. **Role of financial institutions in the industrial development of Punjab.** (Dr Prem Kumar). Department of Commerce, Punjabi University, Patiala.

10. Pathak, Sonal. **Indore Jile mein laghu udyog : Ek sarvekshanatmak adhyayan.** (Dr Rashik Dave). Department of Commerce, Devi Ahilya Vishwavidyalaya, Indore.

11. Pilania, Anil. **A study of growth of India's automobile industry since 1970.** Department of Commerce, Vinoba Bhave University, Hazaribagh.

12. Rama Mohan Rao, Chilukuri. **Human resource development in Banks : *A comparative study of HRD, philosophy practice and outcomes in public and private sector banks.*** (Dr P B Appa Rao). Department of Commerce, Sri Krishnadevaraya University, Anantapur.

13. Roop Chand. **Role of cooperative banks in the development of agriculture and industries in Haryana.** (Dr S D

Vashishtha). Department of Commerce, Maharshi Dayanand University, Rohtak.

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15. Sarda, Anil Narayandas. **An analytical study of the working and management of Bombay stock exchange, 1982-83 to 1992-93.** (Dr K R Dixit). Department of Commerce, Nagpur University, Nagpur.

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17. Udaya Kumar, B. **Prevention of malpractices in business under Weights and Measures Act, Essential Commodities Act and Consumer Protection Act : A case study of Kurnool and Anantapur Districts.** (Dr H Lajipathi Rai). Department of Commerce, Sri Krishnadevaraya University, Anantapur.

18. Vidyasagar Reddy, G. **Tourism industry in Andhra Pradesh.** (Dr C R Reddy). Department of Commerce, Sri Krishnadevaraya University, Anantapur.

Home Science

1. Amirthaveni, M. **Role of selected dietary components on lipid profile among cardiovascular patients.** (Dr Vijayalakshmi Purushothaman). Department of Food Science and Nutrition, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

2. *Molwane, Manjusha* Subhash. ***A study on formulation and evaluation of home made weaning food.*** Department of Home Science, Dr Babasaheb Ambedkar Marathwada University, Aurangabad.

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4. Velmayil, C. ***Female infanticide in the selected districts of Tamil Nadu.*** (Dr M Chandramani). Department of Extension Education, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

Management

1. Chigozie, Nnaike Cajetan. ***A comparative study of the financial operations of Industrial Development Bank of India, IDBI and Nigerian Industrial Development Bank, NIDB.*** *(Dr B S Bhatia and Dr S K Bansal).* Department of Business Management, Punjabi University, Patiala.

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POSTGRADUATE INSTITUTE OF
MEDICAL EDUCATION &
RESEARCH, CHANDIGARH

CORRIGENDUM

Reference admission notice No. 45/97 Acad published in this Paper on 14.4.97, it is notified that the posts of First Year Junior Residents (House Job) for Oral Health Sciences is as follows: General-3, SC/ST-1 and NOT 6 & 2 as was earlier notified.

J.D. Wig,
Officer Incharge,
Academic Section

GURU JAMBHESHWAR UNIVERSITY

HISAR (HARYANA)

ADMISSION NOTICE FOR MANAGEMENT PROGRAMMES

Applications are invited for the following Business Management Programmes :

	PROGRAMME	NO. OF SEATS	
		General	Sponsored
1.	M.B.A.	30	30
2.	M.B.A. (International Business)	20	10
3.	M.B.A. (Finance)	20	10
4.	M.B.A. (Marketing)	20	10
5.	M.B.E. (Master of Business Economics)	30	10

ELIGIBILITY:

At least 50% marks at graduation level (Pass marks for SC/ST candidates). Those appearing in final year examination can also apply.

FEATURES :

Selection through rigrous process comprising written test followed by interview and group discussion of candidates in merit list.

Emphasis on non-conventional methods for imparting instructions.

Extensive exposure to computer applications

Learning of one foreign language compulsory

Well-managed training and placement cell

PROSPECTUS :

For above programmes prospectus will be available from the office of the Registrar w.e.f. 26.4.97 on payment of Rs. 50/- on counter or through post by sending a bank draft of Rs. 65/- drawn in favour of the Registrar, G.J.U. Hisar, Payable at Hisar

WRITTEN TEST :

The university will conduct common written test on 15.6.97 for admission to management programmes (Listed Above) being run at University campus and also for admission to the management programmes being offered by the affiliated institutes. The institutes will advertise their programmes seperately

CENTRES FOR WRITTEN TEST : HISAR, DELHI & CHANDIGARH.

Applications complete in all respects must reach the office of the Chairman, Department of Business Management latest by 31.05.97.

REGISTRAR

CENTRAL INSTITUTE OF ENGLISH AND FOREIGN LANGUAGES

(An Institute of Higher Education Deemed to be a University)

HYDERABAD - 500 007. ADVERTISEMENT NO. 3 / 97

Applications are invited for admission to the following distance mode (correspondence) courses

S.No.	Name of the Course	Eligibility	Last date for receipt of applications
1.	PGCTE (Postgraduate Certificate in the Teaching of English) October 97 - October '98	M.A. in English or an equivalent qualification *	30 June 31 July (with a late fee)
2	PGDTE (Postgraduate Diploma Diploma in the Teaching of English) December '97 - December '98	PGCTE or an equivalent qualification *	31 August 30 September (with a late fee)
3.	M.Phil in English January 1998 - December 1999	PGCTE with a minimum GPA of 3.00 or an equivalent qualification *	31 July 31 August (with a late fee)

***For details see the prospectus**

For application form and prospectus for the above courses please write to the Head, Department of Distance Education, CIEFL, Hyderabad - 500 007 enclosing a crossed postal order / demand draft for Rs. 15/- (Rupees Fifteen only) in favour of the Registrar, CIEFL, Hyderabad - 500 007. You must specify the course you are interested in.

Sd/- (G.VENKATESHWER RAO)
REGISTRAR

DATE : 16-4-1997

CLASSIFIED ADVERTISEMENTS

THE COCHIN EDUCATION SOCIETY

Cochin College Buildings
Kochi-2

Requires for the COCHIN COLLEGE, Jr Lecturer (Pre-degree) in History. Master's Degree in the subject with 50% marks and above with B Ed Degree are considered as per Govt. directive. Those who have passed the National Eligibility Test of the UGC/CSIR are also considered. The recruitment is for teaching at the pre-degree level and selected candidates will be eligible for State's pay scale only. The candidates should not have completed 35 years on 1-1-97. Qualified candidates may apply in the prescribed form available from college office on payment of Rs 100/- (Rs 110/- if required by post). Last date for receipt of completed application is 12.5 97.

PRESIDENT

M.E.S. COLLEGE OF ARTS & COMMERCE

ZUARINAGAR - GOA

Invites applications for the following posts

1. Lecturer in Commerce - 1 Post Full-Time
2. Lecturer in Accountancy - 1 Post Full-Time
3. Lecturer in Economics - 1 Post Full-Time.
4. Lecturer in Konkani - 1 Post Full-Time.
5. Lecturer in Hindi - 1 Post Lecture Basis.
6. Lecturer in Marathi - 1 Post Lecture Basis

All the above posts are reserved for candidates belonging to Scheduled Castes/Tribes. Post under serial No. 1 is being advertised for the Third Time. Other Posts from Serial No. 2 to 6 are being advertised for the second time. For all these posts candidates from reserved categories should apply. If no suitable candidates are available from the reserved categories the existing incumbents of these posts will be considered for appointment temporarily for one academic year.

Academic Qualification: (i) Master's Degree in the relevant subject (i.e. minimum 6 papers) with atleast 55% marks or its equivalent grade (ii). Good academic record and (iii). Candidates should have cleared the Eligibility Test for Lecturers conducted by U.G.C., C.S.I.R. or similar tests accredited by U.G.C. In case candidates having passed the said eligibility test or candidates from RESERVED categories are not available, candidates fulfilling other conditions would be considered for appointment on purely temporary basis for one year. For the post under Serial No 2 the alternate qualification is B.Com. + C.A with five years professional experience and good academic record.

Scale of Pay : Rs. 2200-75-2800-100-4000 plus admissible allowances.

Service Conditions: as prescribed by Goa University, Director of Higher Education, Govt. of Goa and other competent authorities. Persons who are already employed shall send their applications through proper channel. Break in service, if any, should be accounted for

Interested candidates should apply giving full details of academic qualifica-

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INSTITUTE OF ENGINEERING & TECHNOLOGY

S.S.J.M. KANPUR UNIVERSITY, KANPUR.

(Approved by AICTE, State Govt and UGC)

ADMISSION NOTICE

(BACHELOR OF TECHNOLOGY PROGRAMME)

Applications are invited on prescribed form for the Entrance test for admission to the **4 years B Tech** Course in the Following branches (60 Seats in each branch) of the **Institute of Engineering and Technology** of the University

1. **Chemical Engineering**
2. **Computer Science & Engineering**
3. **Electronics & Communication Engineering**
4. **Mechanical Engineering**

ELIGIBILITY:

(a) Intermediate (10+2) OR Equivalent with Physics, Chemistry and Mathematics passed/appeared

(b) Max Age 22 yrs as on 01 10 97 relaxable by 3 yrs for SC/ST candidates

DATE & TIME OF TEST:

TUESDAY	**10.6.1997**	**9 A.M.-12 NOON**	**MATHEMATICS**
TUESDAY	**10.6.1997**	**2 P.M.-5 P.M.**	**CHEMISTRY**
WEDNESDAY	**11.6.1997**	**9 A.M.-12 NOON**	**PHYSICS**

The Information Brochure, enclosing therewith the application form will be available from the following branches of the **Union Bank of India on payment of Rs. 510/- (this includes Entrance Test fee plus Bank Charges of Rs. 10/-) w.e.f. April15, 1997 till May 15, 1997.**

AGRA (Hospital Road), ALLAHABAD (Chowk), Bareilly (Civil Lines) DEHRADUN (Rajpur Road), NEW DELHI (Nehru Place), GORAKHPUR (Golghar), KANPUR(University Campus), LUCKNOW (Hazratganj), MEERUT (Begum Bridge Road), PATNA (Frazer Road), VARANASI (Kabir Chaura Jalpa Devi Road).

The Brochure can also be obtained by post till May 1, 1997 on remitting a demand draft of Rs 525/- in favour of **Finance Officer, Shri Shah Ji Maharaj University, Kanpur**, payable at Union Bank of India Kalyanpur, Branch, Kanpur, for which a self addressed, unstamped envelope of size 28 cm x 23 cm should also be sent to the Registrar, S.S.J.M Kanpur University, Kanpur.

Applications complete in all respects must reach Dr. R.S Bansal, Registrar, S.S.J.M., **Kanpur University, Kanpur-208 024, latest by May 15, 1997** by Registered Post.

NOTE :

(a) Normal Fee Seats, Self-Supporting Fee Seats and NRI/NRI-Sponsored seats are available.

(b) Reservation of Seats, for all categories applicable as per U.P. Government Rules.

DR. R.S. BANSAL
Registrar

tions from SSC onwards clearly indicating the subjects offered, marks scored and class/division obtained at all public examinations, teaching experience, address, date of birth, etc.

True copies of caste certificate and mark statements of all public examinations passed should be enclosed.

Applications duly completed in all respect should reach the Principal within 15 days from the date of publication of this advertisement.

Applicants should clearly state the serial number of the post applied for.

M. S. Kamat
PRINCIPAL

SARASWAT VIDYALAYA'S
COLLEGE OF COMMERCE & MANAGEMENT STUDIES
TELANG NAGAR, KHORLIM, MAPUSA - GOA

WANTED LECTURERS

Applications are invited for the following teaching posts:-

1. Lecturer in Commerce - 1 post full time (Reserved post)

2. Lecturer in Business Law - 1 Post part time (Reserved post)

Academic Qualifications:-

Master's Degree in relevant subject (i.e. minimum 6 papers) with at least 55% or its equivalent grade and a good academic record.

Candidates for all the above posts should have cleared the eligibility test for lecturers conducted by UGC/CSIR or similar test accredited by UGC. In case candidates who have passed the said eligibility test i.e. SET/NET are not available then candidates fulfilling other conditions would be appointed on purely temporary basis.

Reservation of Posts:-

Both the posts are reserved for candidates belonging to SC/ST. These posts are being advertised for the first time. If no suitable candidates are available from the RESERVED categories, candidates from GENERAL category will be considered for appointment on purely temporary basis for one year.

Scale of Pay:-

Pay Scale, allowances and other service conditions as per the rules, ordinances and statutes of Goa University, UGC and the rules of Goa Government.

Persons who are already employed shall send their applications through proper channel. Break in service, if any, should be accounted for. Interested candidates should apply giving full details of academic qualifications from SSCE onwards clearly indicating the subject offered, mark scored and class/division obtained at the public examination, teaching experience, address, date of birth, etc.

True copies of marks statement of all public examinations from SSCE onwards & Caste Certificate if belonging to SC/ST category.

BOTH THE POSTS ADVERTISED ABOVE WILL BE FILLED ONLY IF WORK-LOAD WARRANTS.

Applications duly completed in all respects should reach the Principal within 15 days from the date of publication of this advertisement.

D.M. Deshpande
PRINCIPAL

MAHARASHTRIYA MANDAL'S
CHANDRASHEKHAR AGASHE COLLEGE OF PHYSICAL EDUCATION,
GULTEKADI, PUNE 411 037

(Affiliated to University of Pune,
Id. No.PU/PN/BPED/037(19977)

Wanted

Applications are invited for THREE posts of FULL TIME LECTURER IN PHYSICAL EDUCATION

DATE OF APPOINTMENT 1997-98
(10-6-1997)

RESERVATION OF POST 1 SC, 1 ST,
1 DTNT

If no candidate is available from the said category, selection is likely to be made from other candidates on Temporary basis for one year only.

Qualifications

1) B.A./B.Com./B.Sc.(IInd Class)
2) B.Ed/(Phy.Edn.) (IInd Class) with English/Hindi/Science/Maths./History - Method
3) M.Ed.(Phy.Edn.) with 55% of marks
4) Candidates should have passed NET/SET Examination.
5) Expert in Football/Handball/Athletics/Hockey/Judo/Kabaddi/Basketball/Gymnastics. Desirable

Pay & Allowances

As per University of Pune and Government of Maharashtra.

How to Apply

1) Candidates who are already in service should send their applications through proper channel.
2) Applications with full bio-data in DUPLICATE alongwith true copies of Testimonials (including Caste Cft.) should reach the undersigned within FIFTEEN (15) days from the publication of this advertisement.
3) Candidates from Reserved Category are requested to send one additional copy of application without the enclosures directly to the Dy. Registrar, Reservation Cell, University of Pune, Pune-7

PRINCIPAL

RASHTRIYA SANSKRIT VIDYAPEETHA, TIRUPATI (A.P.)
(Deemed University)

NOTIFICATION

PRE SIKSHA SASTRI ENTRANCE TEST (PSST) 1997
for admission into Siksha Sastri Course 1997-98

Eligibility: Sastri/B.A. Sanskrit as main subject/B.O.L. (Sanskrit)/Siromani/Vidwat Madhyama or Acharya/Vidwat Uttama/M.A. Sanskrit of any recognised University with 45% marks (40% marks for SC/ST candidates), should have completed 20 years of age as on 1-10-1997. Those who appeared for Final Exam may also apply

Centre : TIRUPATI only.

REQUISITION FOR APPLICATION FORM:

Application can be had from the Convener, PSST-'97 through Demand Draft only of Rs. 200/- in person or Rs. 220/- by post of State Bank of India/Andhra Bank payable at Tirupati and drawn in favour of The Registrar, Rashtriya Sanskrit Vidyapeetha, Tirupati-517 507

Last date for submission of filled in form: 15.5.97 upto 5 p.m.

Date of Examination : 23rd June, 1997

Note :
1. Medium of instruction of Siksha-Sastri Course is SANSKRIT only
2. No of seats: 100 only

Dr.K. Hymavathisam
Convener, PSST-97.

PONDA EDUCATION SOCIETY'S

COLLEGE OF ARTS & SCIENCE

P.O. BOX NO. 3
PONDA - GOA 403 401

WANTED

P.E.S. College of Arts & Science, Farmagudi, Ponda-Goa, invites applications from the Indian nationals, for the post of Lecturers in the subjects as mentioned hereinbelow:-

Sr.No.	Subjects	Open	Number of posts reserved for		
			S.C.	S.T.	OBC
1.	Physics				1
2.	Chemistry		1* (Phy. Chem)	1**	
3.	A) Botany		1**		2
	B) Botany		1*		
4.	Zoology	1(P.T.)			2
5.	Microbiology	1(P.T.)			
6.	A) Mathematics	1(P.T.)			
	B) Computer Awareness	1(P.T.)			
7.	Economics	1(L.B.)			
8	Political Science	1(L.B.)			
9	History		1**		
10.	Philosophy	1(P.T.)			
11.	Psychology	1(P.T.)		1*	
12.	Marathi	1(L.B.)			
13.	Hindi		1*		
14.	Konkani			1*	

Candidates belonging to O.B.C. category from Goa state alone are eligible to apply for the posts reserved for O.B.C. The full time posts at Sr Nos. 1 3 and 4 are permanent posts.

The posts marked (*) are being advertised for the first time. In case reserved category candidates are not available or found suitable, these posts will be filled up on purely temporary basis for one year only. Those marked by (**) are being advdertised for the second time.

Minimum Qualifications: (1) Masters degree with atleast 55% marks in the appropriate subject and a good academic record. (2) Passed NET/SET conducted by UGC/CSIR/Universities recognised by U.G.C.

If candidates passing the NET/SET are not available, the posts will be filled up on purely temporary basis for a period of one year by appointing candidates fulfilling other conditions of minimum qualifications.

Those candidates who have cleared NET/SET but do not come from reserved category may be considered for appointment on purely temporary basis for one year if found suitable and if no suitable reserved category candidates are available for the posts advertised the second time.

Note: (1) Persons already employed should forward their applications through proper channel. (2) Any break in service should be accounted for. (3) All other conditions and pay scales are as per Goa University/U.G.C./Goa Government. (4) The *posts will be filled up only if work load warrants.*

Applications clearly stating the Name, age, and full details of academic qualifications from S.S.C. onwards indicating the subjects offered, the marks scored and class/division obtained at *all* the public examinations, teaching experience etc alongwith certified true copies of the statement of marks, certificates/testimonials including caste certificate issued by the appropriate authorities, if belonging to S.C./S.T./O.B.C. category should reach the Principal **within 15 days** from the date of publication of this advertisement.

Incomplete applications will not be considered.

A.K. Heblekar
PRINCIPAL

Familiarise Sanskrit with
THE SANSKRIT BEGINNER
a neo-classic method by
Veeyes Idaykidath
Rs. 50 (Rgd postage free)
Distributors
Saparya Books,
Idaykidam-P.O.691 505
Kerala.

UNIVERSITY OF DELHI

Ref: Estab.-IV/Advt. 152/97
Dated : April 15, 1997

Applications are invited on the prescribed form for the following posts so as to reach the Registrar, University of Delhi, Delhi-110 007 latest by **19th May 1997**.

Sl. No.	Post/Department (No. of posts)/ *Reservation if any*
1.	Director, (Directorate of Hindi Medium Implementation) (1) UR
2.	Professional Seniors, (Delhi University Library System) (5) One each reserved for SC, ST, OBC and UR-2
3.	Senior Progammer (Computer Centre) (3) Reserved for OBC-1 and UR-2
4.	*Senior Analyst* (*Computer* Centre) (1) Reserved for SC
5.	Deputy Registrar (Central Office) (1) Reserved for OBC
6.	Documentation Officer (Delhi University Library System) (2) Reserved for OBC-1 and UR-1
7.	Professional Junior (Delhi University Library System) (6) Reserved for SC-2, ST-1, OBC-1 and UR-2
8.	Junior Programmer (Computer Centre) (1) UR
9.	Technical Officer (Deptt. of Botany) (1) Reserved for SC
10.	Security Officer (Central Office) (2) Reserved for SC-1 and UR-1
11.	Asstt. Security Officer (Central Office) (1) Reserved for ST
12.	University Cashier (Central Office) (1) UR
13.	Physiotherapist (WUS Health Centre) (2) Reserved for OBC-1 and UR-1
14.	Technical Assistant (Deptt. of Physics & Astrophysics) (4) 2 each reserved for SC and ST
15.	Technical Assistant (Deptt. of Adult Continuing Education and Extension) (1) UR
16.	Technical Assistant (Deptt. of Botany) (1) Reserved for ST
17.	Technical Assistant (Deptt. of Zoology) (2) Reserved for SC-1, and UR-1
18.	Carpenter (Deptt. of Physics and Astrophysics) (1) Reserved for OBC
19.	Electrician (Deptt. of Botany) (1) UR
20.	Laboratory Attendant (Deptt. of

Botany) (2) Reserved for SC-1 and UR-1

21. Laboratory Attendant (Deptt. of Linguistics) (1) UR

22. Laboratory Attendant (Deptt. of Physics and Astrophysics) (7) Reserved for SC-1, ST-2 & UR-4

23. Laboratory Attendant (Deptt. of Zoology) (7) Reserved for SC-2, ST-1, OBC-1 and UR-3

24. Mali (Deptt. of Botany) (1) Reserved for SC

25. Hindi Assistant (Deptt. of Hindi) 'CORRIGENDUM' (Ref: Advt. No. 148 dated 30.8.1996) Qualifications for the post of 'Hindi Assistant' may be read as "2nd class (with at least 50% marks) M.A. in Hindi" instead of '1st or High Second Class M.A. in Hindi'.

SC = Scheduled Caste
ST = Scheduled Tribe
OBC = Other Backward Classes
UR = Unreserved

Scale of Pay :

1. Sl. No. 1 Rs. 4500-150-5700-7300
2. Sl. No. 2 Rs. 3700-125-4950-150-5700
3. Sl. No. 6 to 9 Rs. 2200-75-2800-100-4000
4. Sl. No. 10 Rs. 2000-60-2300-EB-75-3200-100-3500
5. Sl. No. 11 to 13 Rs. 1640-60-2600-EB-75-2900
6. Sl. No. 14 to 17 Rs. 1400-40-1800-EB-50-2300
7. Sl. No. 18 Rs. 1320-30-1560-EB-40-2040
8. Sl. No. 19 Rs. 975-25-1150-EB-30-1540
9. Sl. No. 20 to 23 Rs. 950-20-1150-EB-25-1400
10. Sl. No. 24 Rs. 750-12-870-EB-14-940.

APPLICATION FEES:

Application fee of Rs. 100/- (Rs. 25/- in case of SC/ST/OBC) for the posts at Sl. No. 1 to 9 and Rs. 20/- (Rs. 5/- in case of SC/ST/OBC) for posts at Sl. No. 10 to 24 (NON REFUNDABLE) for each post in the form of Indian Postal Order/Demand Draft drawn in favour of the Registrar, University of Delhi payable at Delhi/New Delhi is required to be submitted alongwith the Application Form.

NOTE :

1. All the above posts carry DA, IR, CCA, HRA etc. as admissible under the rules from time to time;
2. The University reserves the right not to fill up any of the vacancies advertised without giving any reason;
3. The Relaxation of any of the qualifications may be made in exceptional cases, on the recommendations of the Selection Committee;
4. Canvassing in any form by or on behalf of the candidates will disqualify the candidates;
5. **Application, duly filled in for the posts under Sl. No. 1 to 12 may be sent to Registrar, University of Delhi. As for the other posts, applications duly filled in be sent directly to the concerned Head of the Department, University of Delhi.**

Application forms and other details regarding prescribed qualifications can be had from the **Establishment Branch IV (Room No. 205), New Administrative Block, University of Delhi, Delhi-110 007** on all working days from 9.30 A.M. to 12.30 P.M. and 2.00 P.M. to 5.00 P.M. either personally or by sending a self addressed stamped (worth Rs. 12/-) envelope size (13 cms. x 28 cms) addressed to **the Registrar, University of Delhi, Delhi - 110 007.**

Delhi - 110 007
15th April, 1997

K.K. Panda
REGISTRAR

BANSILAL RAMNATH AGARWAL CHARITABLE TRUST'S

VISHWAKARMA INSTITUTE OF TECHNOLOGY

666, Upper Indiranagar,
Bibwewadi, Pune - 37.

(Approved by A.I.C.T.E., Recognised by State Government and affiliated to Pune University)

Tel.No.: 412294/415594, Fax : 91-212-415926, E-mail : prinvit@giaspn01.vsnl.net.in

Sr No	Name of the post and Branch	Number of Posts Proposed to be advertised					
		SC	ST	DT(A)	NT(B)	Open	Total
	PROFESSORS						
1.	Mechanical Engineering	1	-	-	-	-	1
2.	Electronics Engineering	1	-	-	-	1	2
3.	Computer Engineering	1	-	-	-	1	2
4.	Instrumentation Engineering	1	-	-	-	1	2
	ASSISTANT PROFESSORS						
1.	Mechanical Engineering	1	1	-	-	2	4
2.	Electronics Engineering	1	1	-	-	2	4
3.	Computer Engineering	1	1	-	-	2	4
4	Instrumentation Engineering	1	1	-	-	2	4
	LECTURERS						
1.	Mechanical Engineering	2	2	1	-	4	9
2.	Electronics Engineering	1	1	1	-	4	7
3.	Electrical Engineering	1	-	-	-	-	1
4.	Computer Engineering	2	-	-	-	3	5
5.	Instrumentation Engineering	-	1	-	-	-	1
6.	Applied Science — Mathematics	1	-	-	-	-	1
	Chemistry	1	-	-	-	-	1
	Physics	1	-	-	-	-	1
7.	Metallurgy	1	-	-	-	-	1
	WORKSHOP SUPERINTENDENT	-	-	-	-	1	1

Qualification and Pay Scale : As per A.I.C.T.E. / Pune University Rules

Apply on plain paper with full bio-data and copies of testimonials on or before 24-5-1997.

Telephone 04144-22610(CDM)
Fax . 04144-22987

ANNAMALAI UNIVERSITY

DIRECTORATE OF DISTANCE EDUCATION

OPEN UNIVERSITY SYSTEM

ADMISSION NOTIFICAITON FOR THE YEAR 1997-98

The Directorate offers the following courses of study under the Open University System

NO FORMAL EDUCATIONAL QUALIFICATION IS REQUIRED.

1 POST GRADUATE COURSES: (Two years)

M.A. History*/Economics*/Sociology*/English/Tamil/Public Administration

Eligibility: The candidate should have completed 25 years of age as on 01 07 1997

2 UNDER GRADUATE COURSES: (Three years)

B.A. History*/Sociology*/Psychology/Economics*/Political Science*/ English / Tamil / Population Studies*/ B Lit (Tamil) / B.Com */ B Sc (Maths)

3 DIPLOMA COURSE: (One Year)
Diploma in Saiva Siddhanta*

Eligibility: The candidate should have completed 18 years of age as on 01 07 1997

(* both English and Tamil Medium are offered)

Provisional admission to the courses will be confirmed only on the applicant passing the **Entrance Test** after undergoing the preparatory orientation course

Application Form and Prospectus can be had from **The Special Officer, Open University System, Directorate of Distance Education, Annamalai University, Annamalainagar - 608 002** by sending a requisition and a self addressed envelope along with a crossed Demand Draft for Rs. 50 towards the cost of application form drawn in favour of the **DIRECTOR, D.D.E., ANNAMALAI UNIVERSITY**, on any bank payable at Annamalainagar or Chidambaram mentioning clearly the name of the course Demand drafts purchased on or after 01 04 1997 only will be accepted

Applications can also be had in person from the Directorate of Distance Education and the following Study Centres *and Information Centres from 07.04.1997* on payment of Rs. 50/-. *Application form for all courses will be issued upto 20 06 1997* The last date for receipt of filled in application is **30.06.1997.**

All the Study Centres and Information Centres except that at Annamalainagar will remain closed on all Tuesdays, Second Mondays and other public holidays

SPOT SELECTION: Spot selection for admission to the preparatory course is made through all our Study Centres for all courses from 17 04 1997 **Those who passed the Entrance Test during 1995-96 & 1996-97 but could not join the courses are also eligible for admission without undergoing the Entrance Test this year.**

Applicants are advised to write to the Directorate individually for application forms and admission The Directorate has no agents Spurious applications would be summarily rejected

PLACE ANNAMALAINAGAR
DATE 01 04 1997

DR. L.B. VENKATRANGAN
DIRECTOR

Study Centre : (1) **CHENNAI**: 19 Rukmani Lakshmipathi Road Egmore Chennai-600 008 (☎ 8555010) (2)* 27 North Park Street Venkatapuram Ambattur Chennai-600 053 (3)* 11, First Cross Street New Colony Chrompet Chennai 600 044, (4) **TIRUCHI**: 30-B 7th Cross, Thillai Nagar Tiruchi - 620 018 (☎ 760950) (5) **SALEM**: 15 Dr Subbarayan Street Salem - 636 001 (Near Palace Theatre) (☎ 419660), (6) **NAGERCOIL:** 316 E K P Road, Nagercoil-629 001 (☎ 30651). (7) **TIRUNELVELI**: 49-C Kailasapuram North Street Bava Building (Near Bust Stand) Tirunelveli-627 001 (☎ 322923). (8) **VELLORE: 4**, Thiagarajapuram, Vellore - 632 001 (Near Lakshmi Theatre) (☎ 27647), (9) **MADURAI:** 176, North Veli Street, Madurai - 625 001 (☎741327) (10) **COIMBATORE** 72, Sarojni Street, Ram Nagar, Coimbatore - 641 009 (☎234406), (11) ***KARAIKUDI:*** *7, Seventh Street, Subramaniapuram,* Karaikudi - 623 002 (☎ 23417) (12) **NEW DELHI:** 51 A, Institutional Area, Thuglagabad, (Near Batra Hospital), New Delhi - 110 062 (☎ 6987638), (13) **CALCUTTA:** 19, Sardar Sankar Road, Calcutta - 700 029 (☎ 4667215). (*Information Centres).

UNIVERSITY NEWS, 35(17), APRIL 28, 1997 Regd. No. R.N. 7180/63 Postal Regd. No. DL–11106/97

हैदराबाद विश्वविद्यालय
University of Hyderabad

P.O. Central University, Hyderabad - 500 046

ADMISSION ANNOUNCEMENT 1997-98

The University of Hyderabad, a Central University established by an Act of Parliament in 1974, offers facilities for post-graduate and research studies in major disciplines in sciences, humanities, social sciences, performing arts, fine arts and communication. Admissions are made on all-India basis in order of merit in the entrance examination.

The entrance examinations for admission to the following courses during 1997-98 will be held from **25 to 29 June 1997** at Bangalore, Bhubaneswar, Chennai, Cochin, Delhi, Hyderabad, Madurai, Pune, Tirupati, Vijayawada and Waltair.

M.Sc. in Mathematics / Applied Maths, Statistics-O.R., Physics, Electronics, Chemistry, Biochemistry, Plant Sciences, *Animal Sciences and* **M.C.A.**

M.A. in English, Philosophy, Hindi, Functional Hindi (Translation), Telugu, Urdu, Applied Linguistics, Economics, History, Political Science, Sociology, Anthropology, Communication, **MPA** Dance and Theatre Arts **MFA** Painting / Print Making.

M.Phil. in Mathematics, Applied Maths, Statistics-O.R., Physics, Chemistry, Chemical Education, English, Philosophy, Hindi, Telugu, Urdu, Applied Linguistics, Translation Studies, Comparative Literature, Economics, History, Political Science, Sociology, Anthropology and Regional Studies. ***M.Tech.** in Computer Science and Artificial* Intelligence.

Ph.D. in Mathematics, Applied Maths., Statistics-O.R., Computer Sciences, Physics, Chemistry, Biochemistry, Plant Sciences, Animal Sciences, English, Philosophy, Hindi, Telugu, Urdu, Applied Linguistics, Translation Studies, Comparative Literature, Economics, History, Political Science, Sociology, Anthropology, Regional Studies, Communication and Folk Culture Studies.

P.G. Certificate/Diploma/Advanced Diploma in Chinese and Japanese and PG Diploma in Acting (all part-*time evening courses)*

Note: Provision also exist for Ph.D admission in respect of M.Phil./J.R.F. qualified candidates in January 1998 session. For further details refer to the Prospectus.

Detailed information regarding entrance examinations and qualifications for admission etc., is given in the Prospectus 1997-98. Candidates who are appearing in final examination of the qualifying degree are also eligible to apply.

RESERVATION OF SEATS: In each course, 15% and 7.5% of the seats are reserved for SC and ST candidates respectively with a provision for inter-changeability wherever necessary. 3% of the seats are reserved for physically handicapped candidates. Relaxation in the prescribed percentage of marks in also provided.

HOW TO APPLY : Prospectus and application forms can be obtained *in person* from 28/04/1997 to 23.5.1997 from the Academic Section, Administration Building in the University Campus, Hyderabad - 500046 or from "The Golden Threshold" premises of the University at *Nampally Station Road, Hyderabad* - 500001, *against* cash payment of Rs. 100/- for one set of application form and Prospectus and Rs. 50/- for each additional application form.

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The prospectus and application form/s may also be obtained *by post* upto 16.5.1997 from the **Dy. Registrar (Acad. & Exams), University of Hyderabad, P.O. Central University, Hyderabad - 500046**, by sending (a) a requisition, (b) one self-addressed slip, (c) a crossed demand draft for Rs. 110/- drawn in favour of the Finance Officer, University of Hyderabad, on State Bank of India, Hyderabad Central University Branch, Hyderabad (Code 5916) or on Andhra Bank, Nampally Branch, Hyderabad (Code 378) for the first set of one application form and prospectus and Rs. 50/- for each additional application form. Normally, not more than 3 applications will be issued with one Prospectus. **A separate application is required for each course.**

Important dates

Last date for receiving requisition for issue of application forms by post: **16.05.1997 (FRIDAY)**

Last date for receiving completed application forms: **23.05.1997 (FRIDAY)**

The University will not be responsible for any postal delay. Candidates are therefore, advised to apply well in time.

Dated : 17-4-1997

T.R. Vig
Controller of Examinations

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